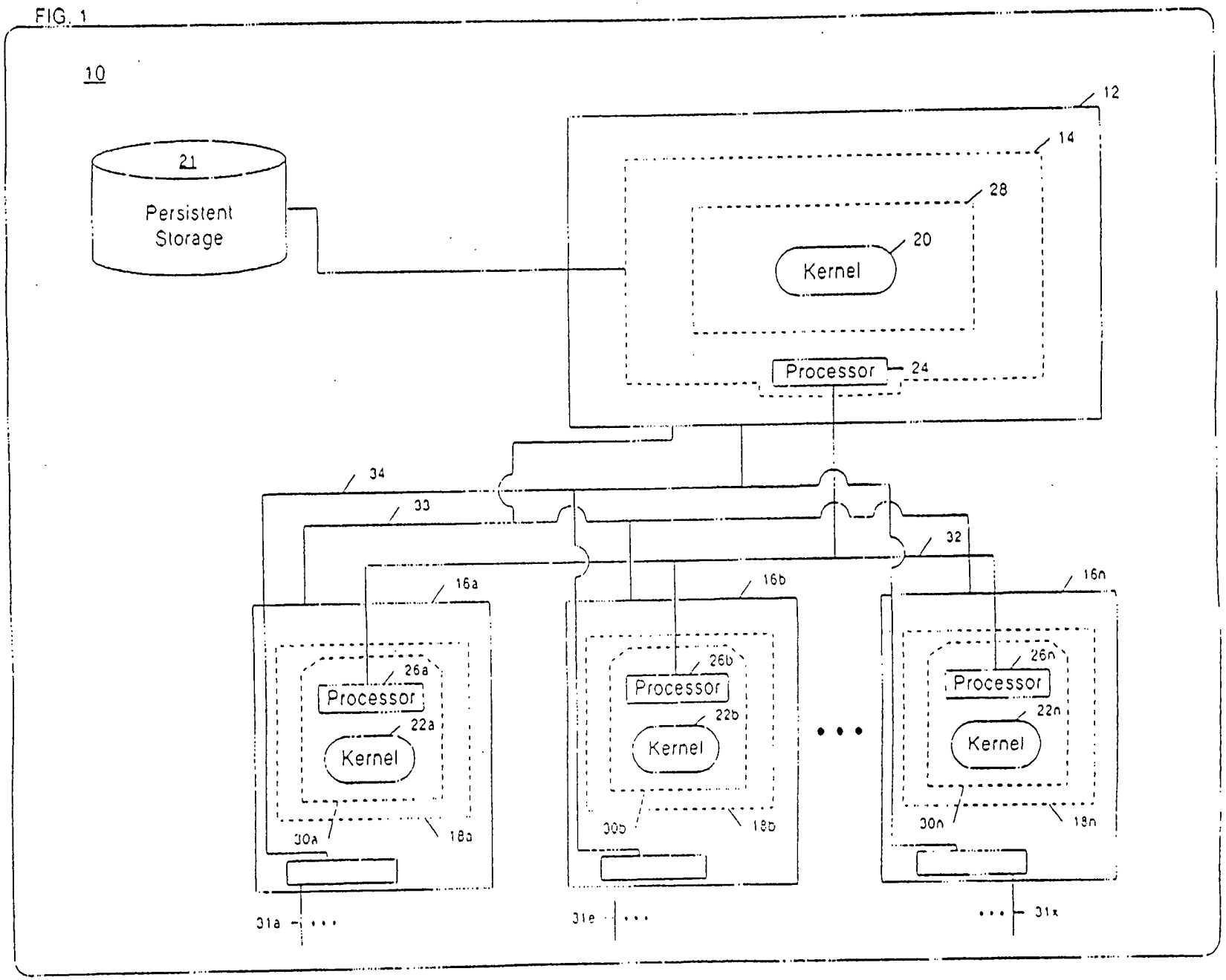
FIG. 1


10
12
14
28
20
Kernel
Processor
24
21
Persistent Storage
34
33
32
16a
16b
16n
26a
Processor
22a
Kernel
30a
18a
26b
Processor
22b
Kernel
30b
18b
26n
Processor
22n
Kernel
30n
18n
31a
31e
31x

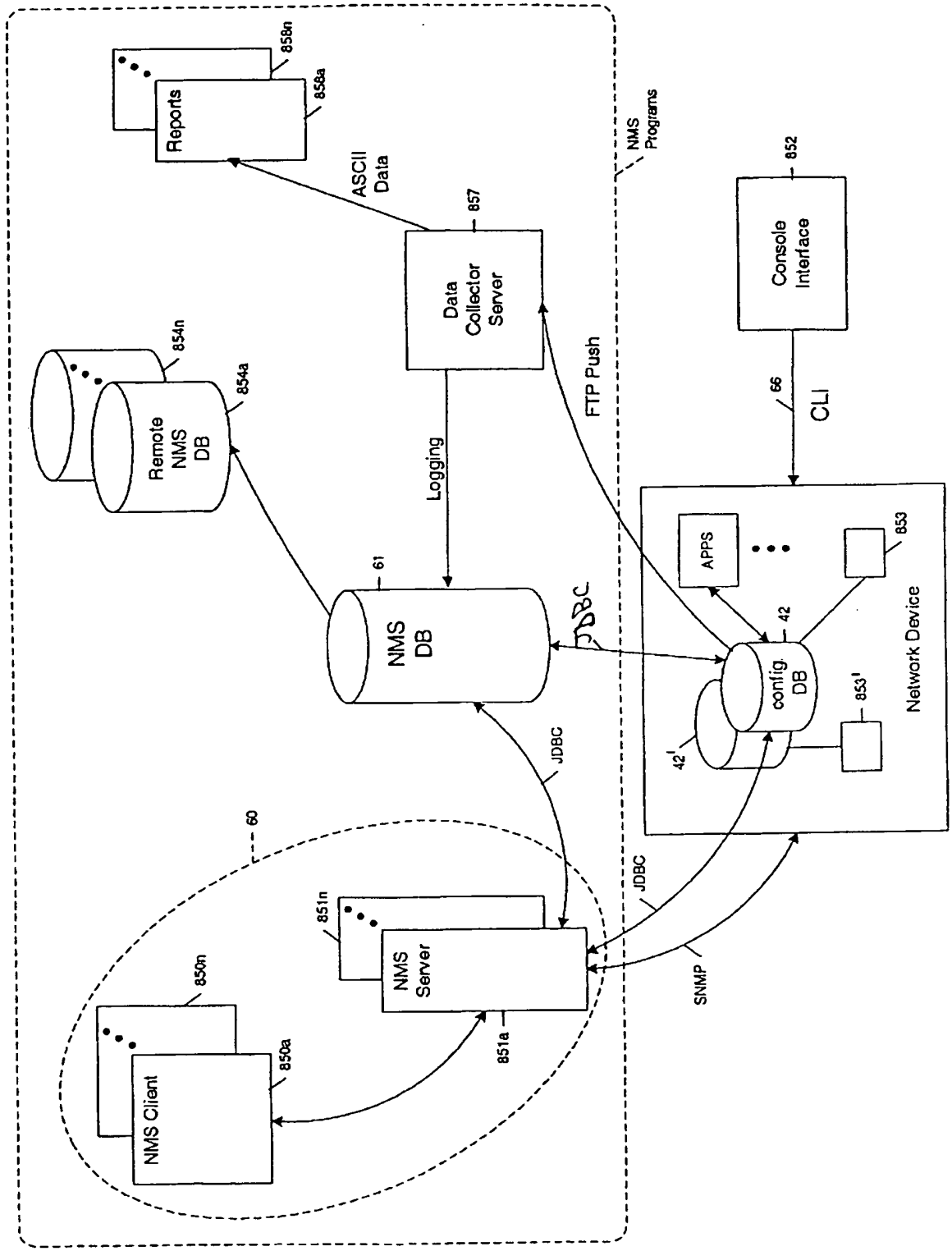

NMS Programs
Reports
858n
858a
ASCII Data
857
Data Collector Server
FTP Push
Logging
Remote NMS DB
854n
854a
61
NMS DB
JDBC
JDBC
852
Console Interface
66
CLI
APPS
853
42
config DB
42'
853'
Network Device
60
851n
NMS Server
851a
850n
NMS Client
850a
SNMP

Fig. 2a

09750"0062250

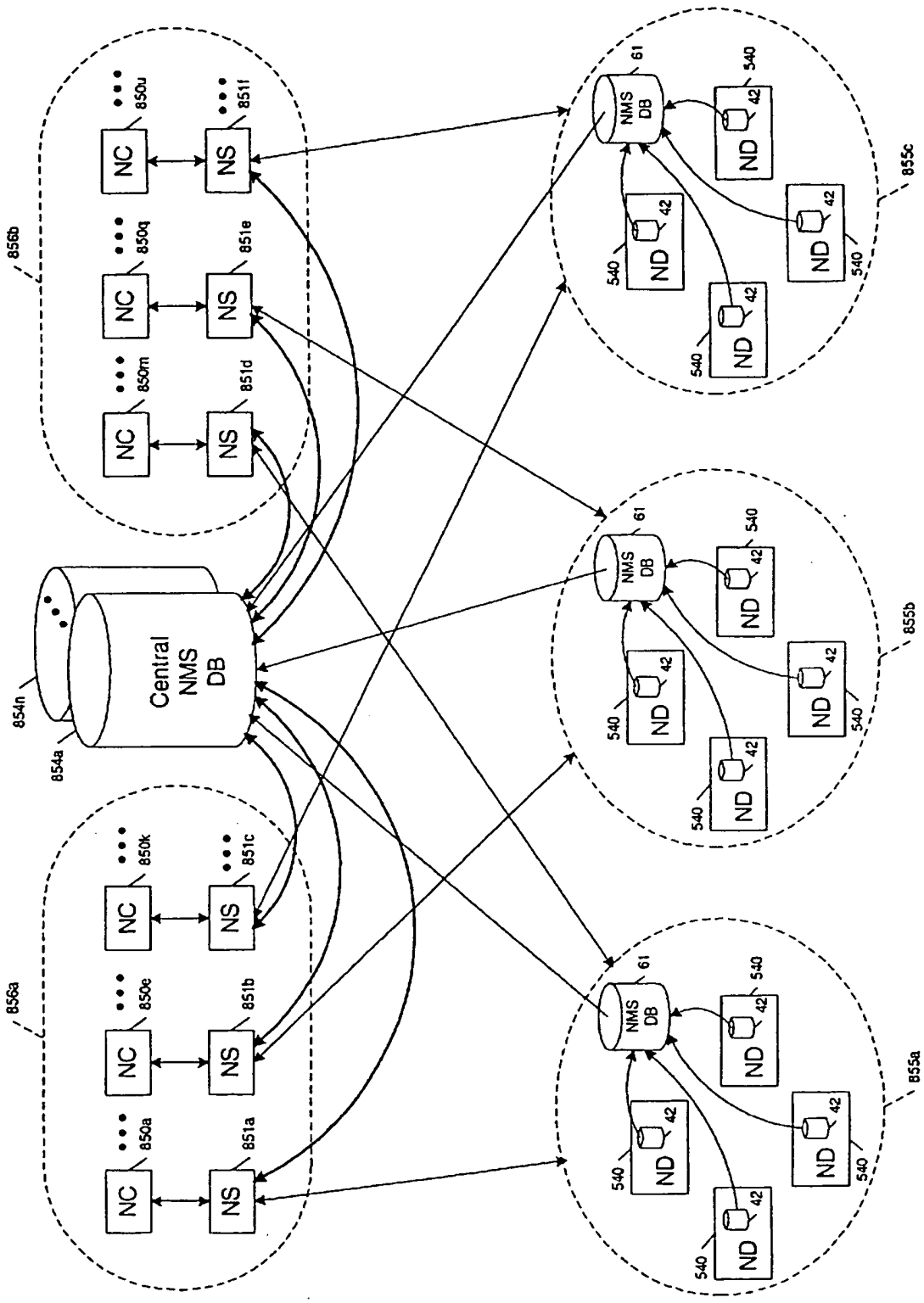
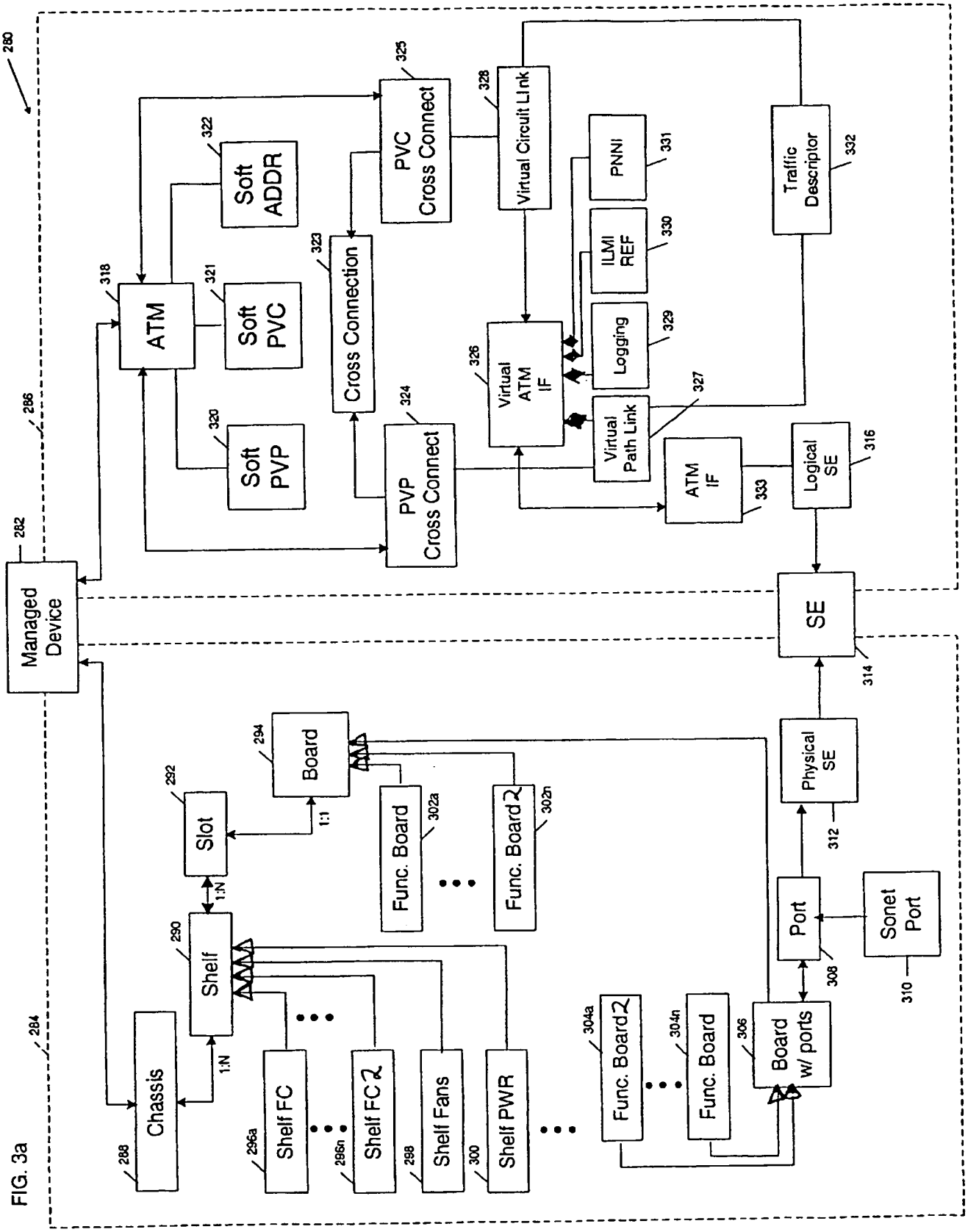


Fig. 2b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Managed Device
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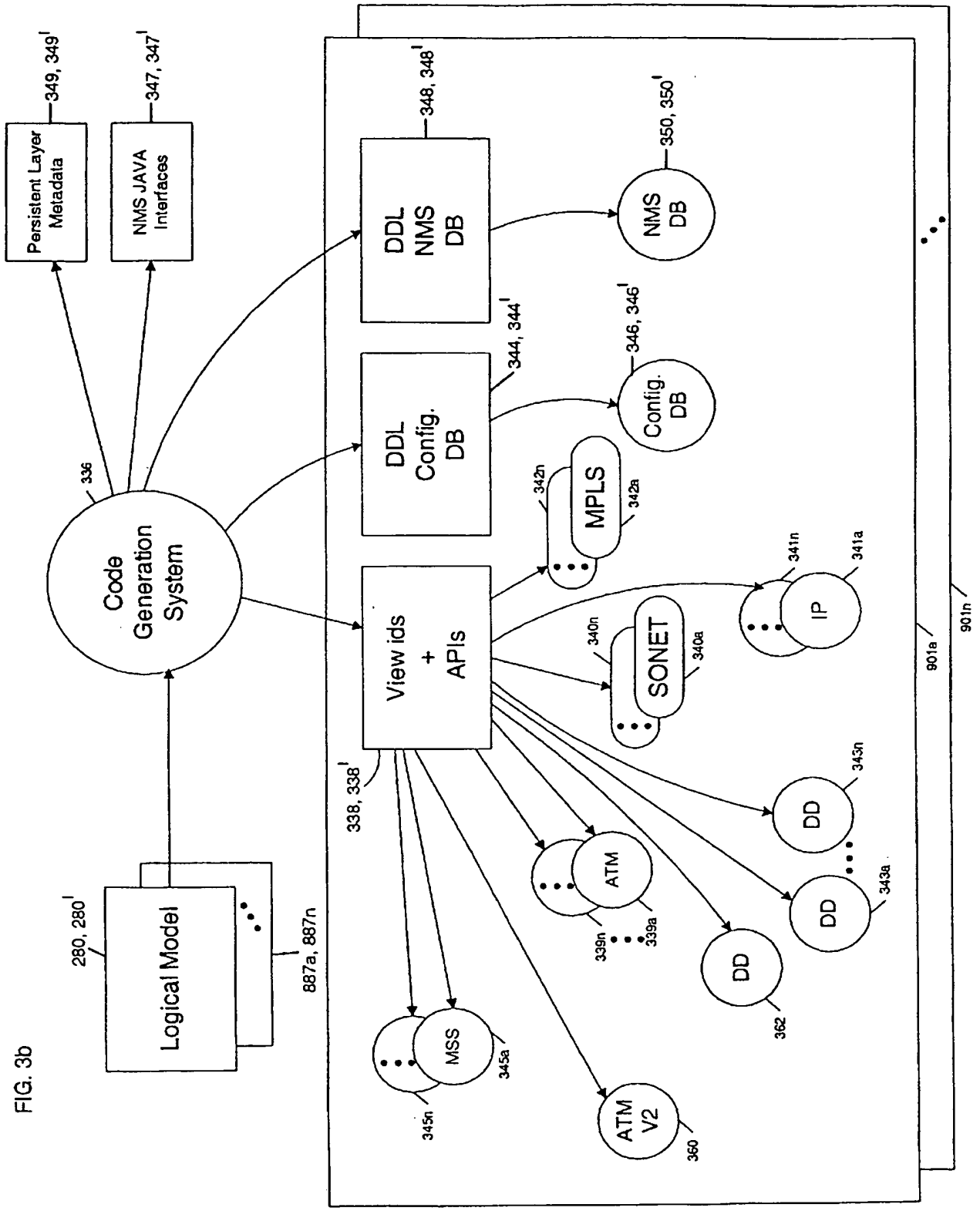
286
ATM
318
Soft PVP
320
Soft PVC
321
Soft ADDR
322
Cross Connection
323
PVP Cross Connect
324
PVC Cross Connect
325
Virtual ATM IF
326
Virtual Path Link
327
Virtual Circuit Link
328
ILMI REF
330
PNNI
331
Logging
329
Traffic Descriptor
332
ATM IF
333
Logical SE
316
SE
314
Physical SE
312
Port
308
Sonet Port
310
Board w/ ports
306
Func. Board2
304a
Func. Board
304n
Board
294
Slot
292
1:1
1:N
Func. Board
302a
Func. Board2
302n
Shelf
290
1:N
284
Chassis
288
Shelf FC
296a
Shelf FC2
296n
Shelf Fans
298
Shelf PWR
300

FIG. 3a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349, 349'
NMS JAVA Interfaces
347, 347'
Code Generation System
336
Logical Model
280, 280'
887a, 887n
DDL NMS DB
348, 348'
DDL Config. DB
344, 344'
View ids + APIs
338, 338'
NMS DB
350, 350'
Config. DB
346, 346'
MPLS
342a
342n
SONET
340a
340n
IP
341a
341n
ATM
339a
339n
DD
343a
343n
DD
362
MSS
345a
345n
ATM V2
360
901a
901n

FIG. 3b

09F780 "00Z2950

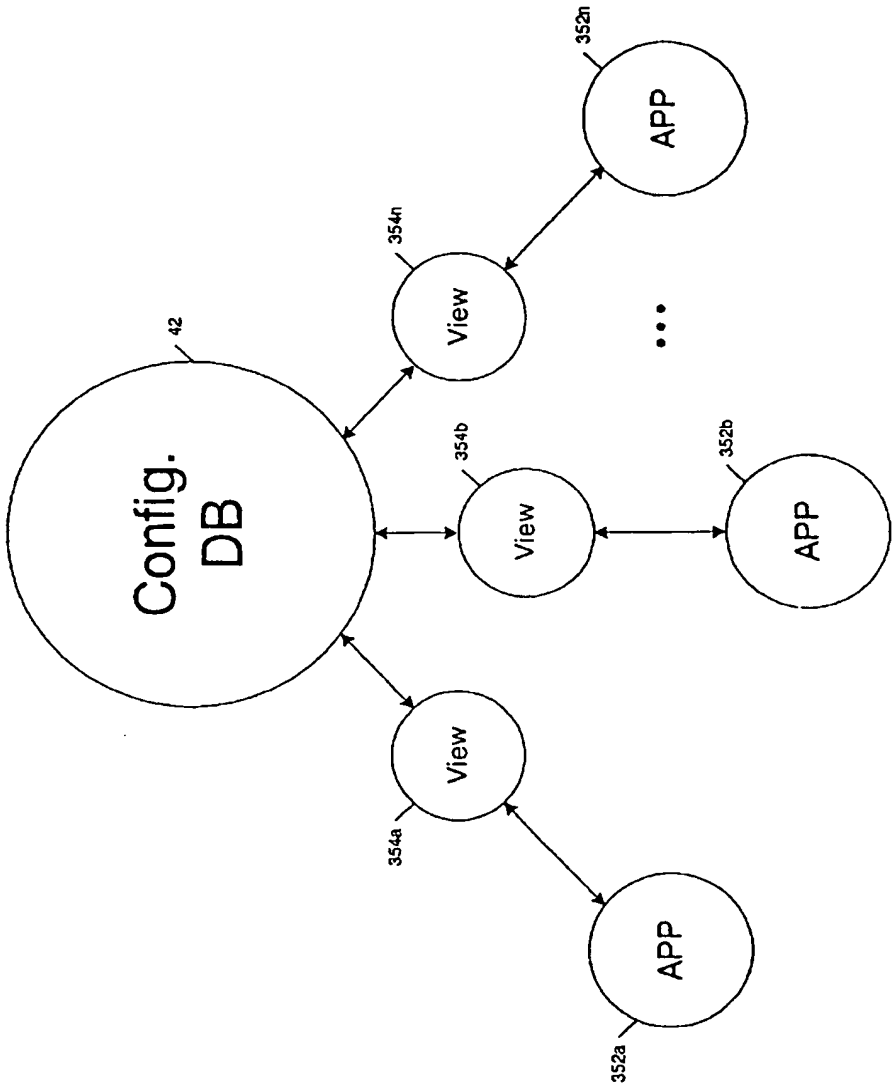
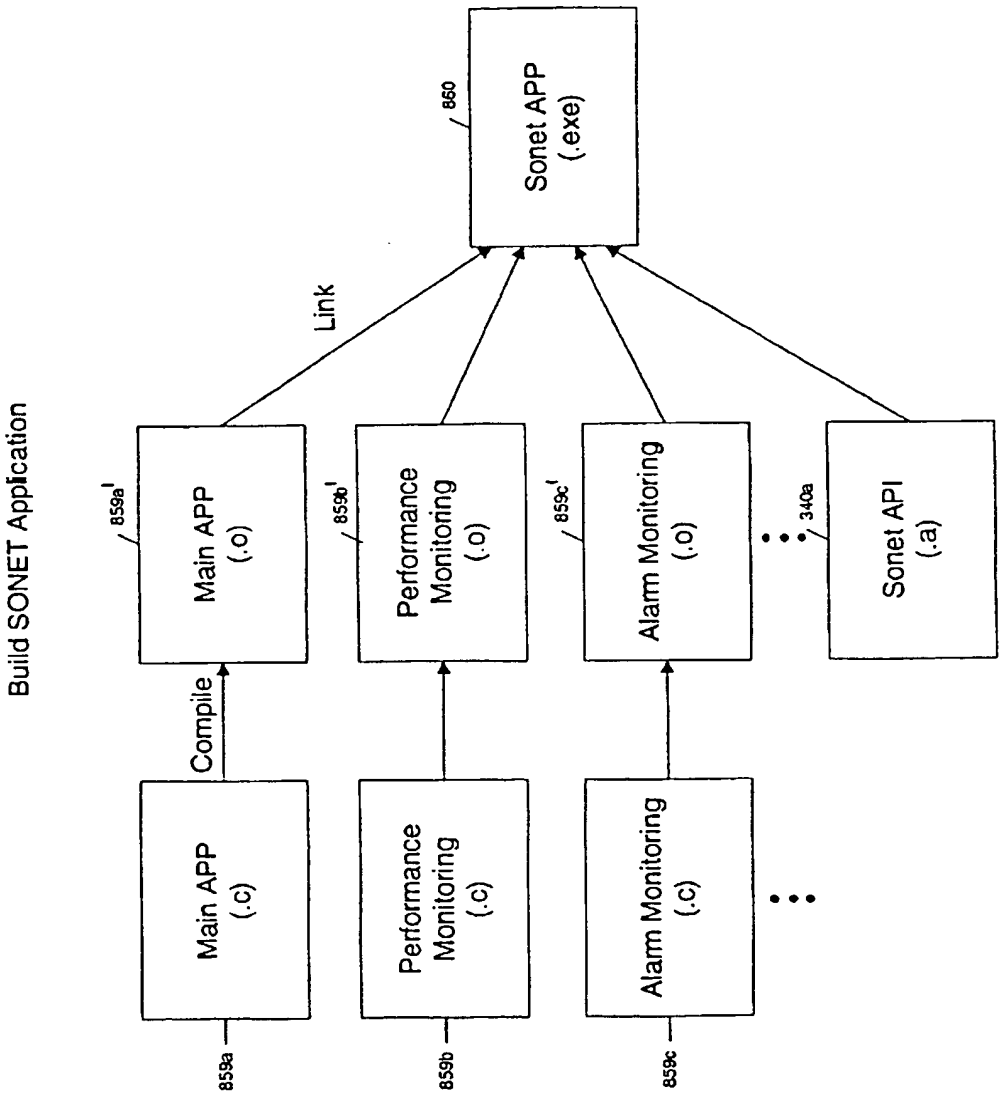


FIG. 3c

08T780 "00842960

Fig. 3d



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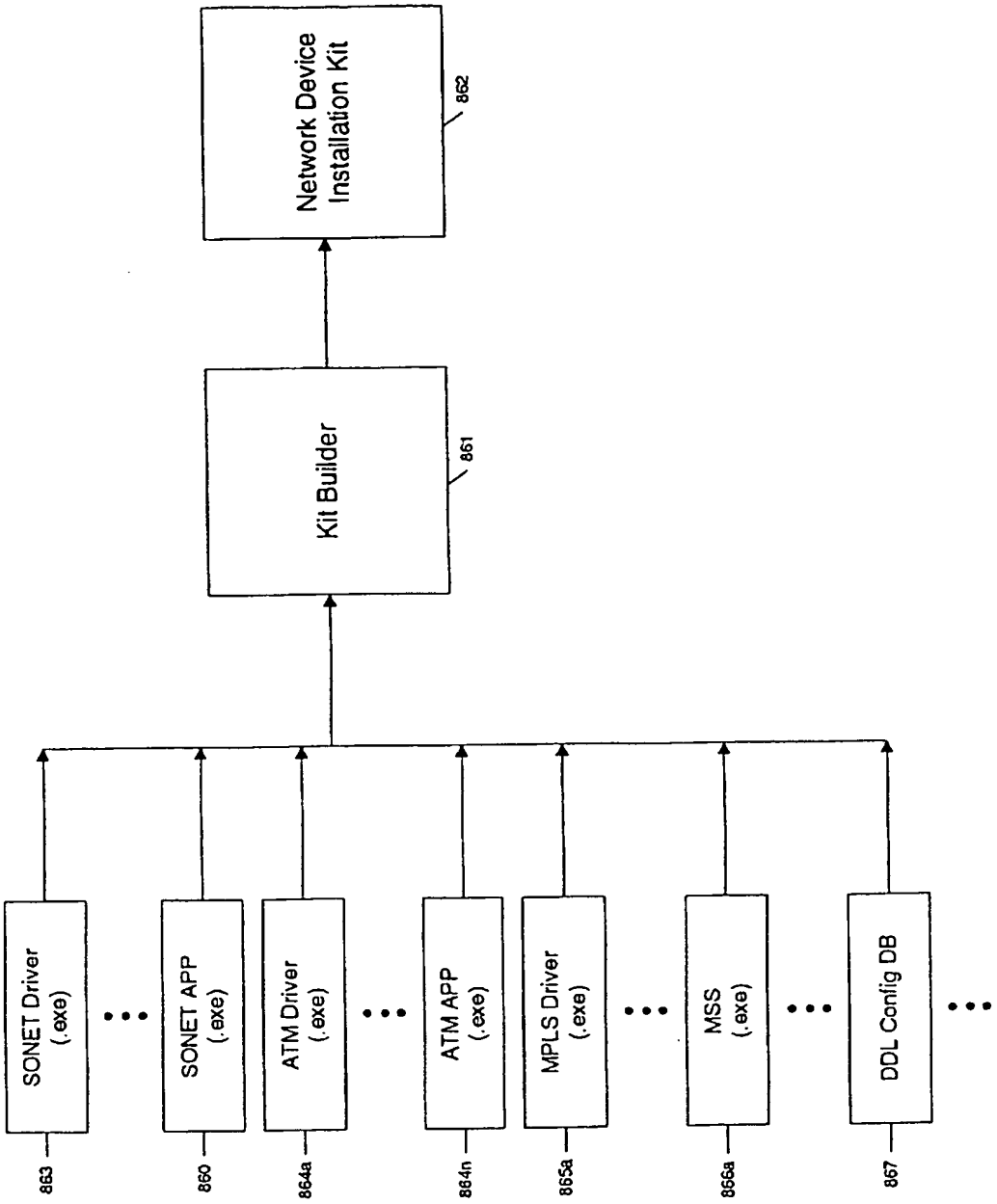


Fig. 3e

Sent By: Equipe Communications; 781 795 2031; Jul-21-00 3:34PM; Page 2/2

00T730"0082960

Fig. 3

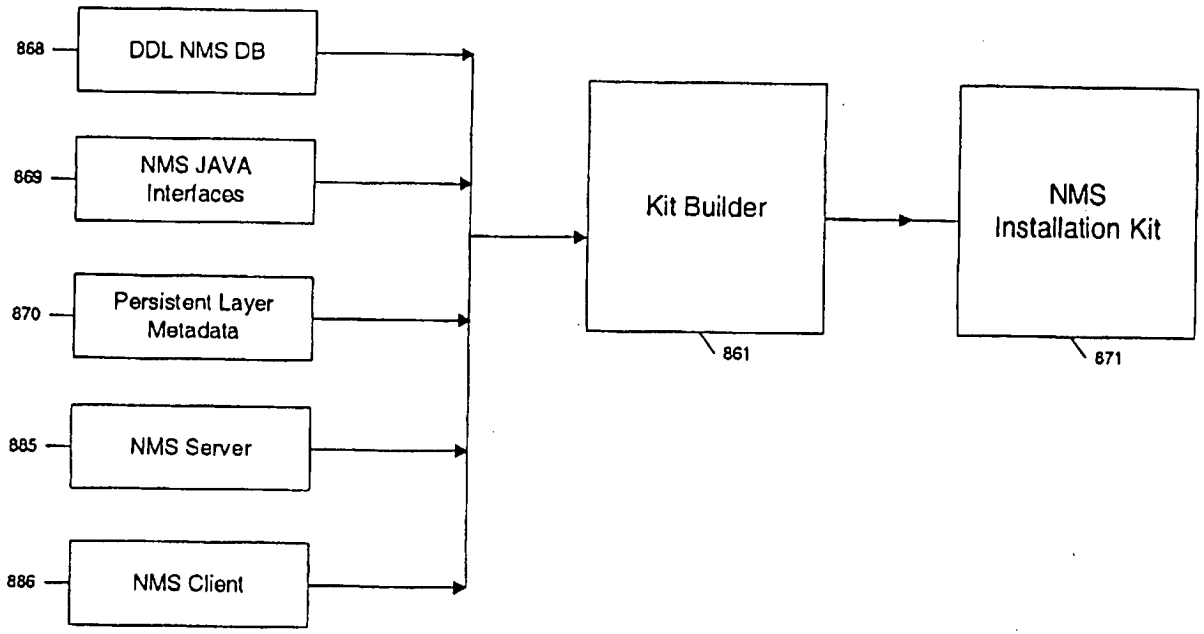
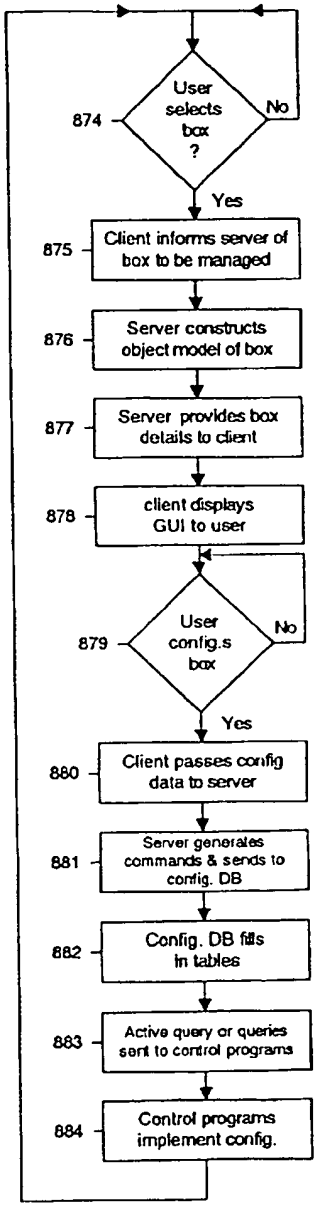


Fig. 3g



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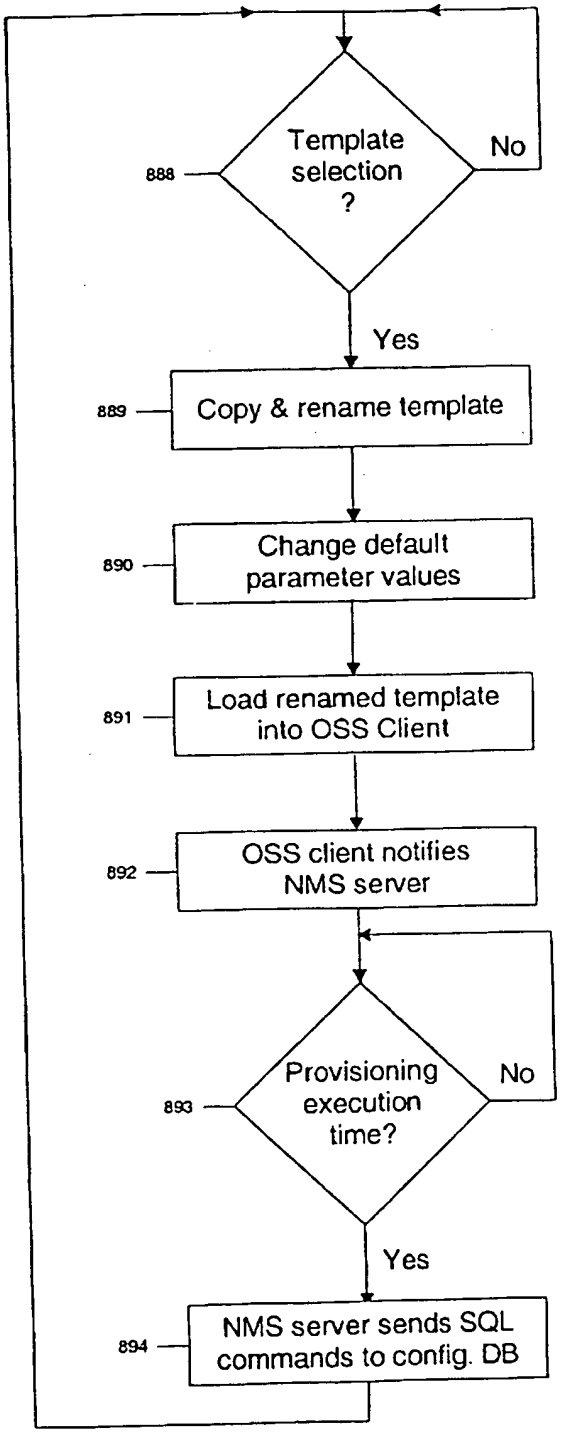


Fig. 3h

Sent By: Equipe Communications; 781 795 2031; Jul-21-00 2:44PM; Page 11

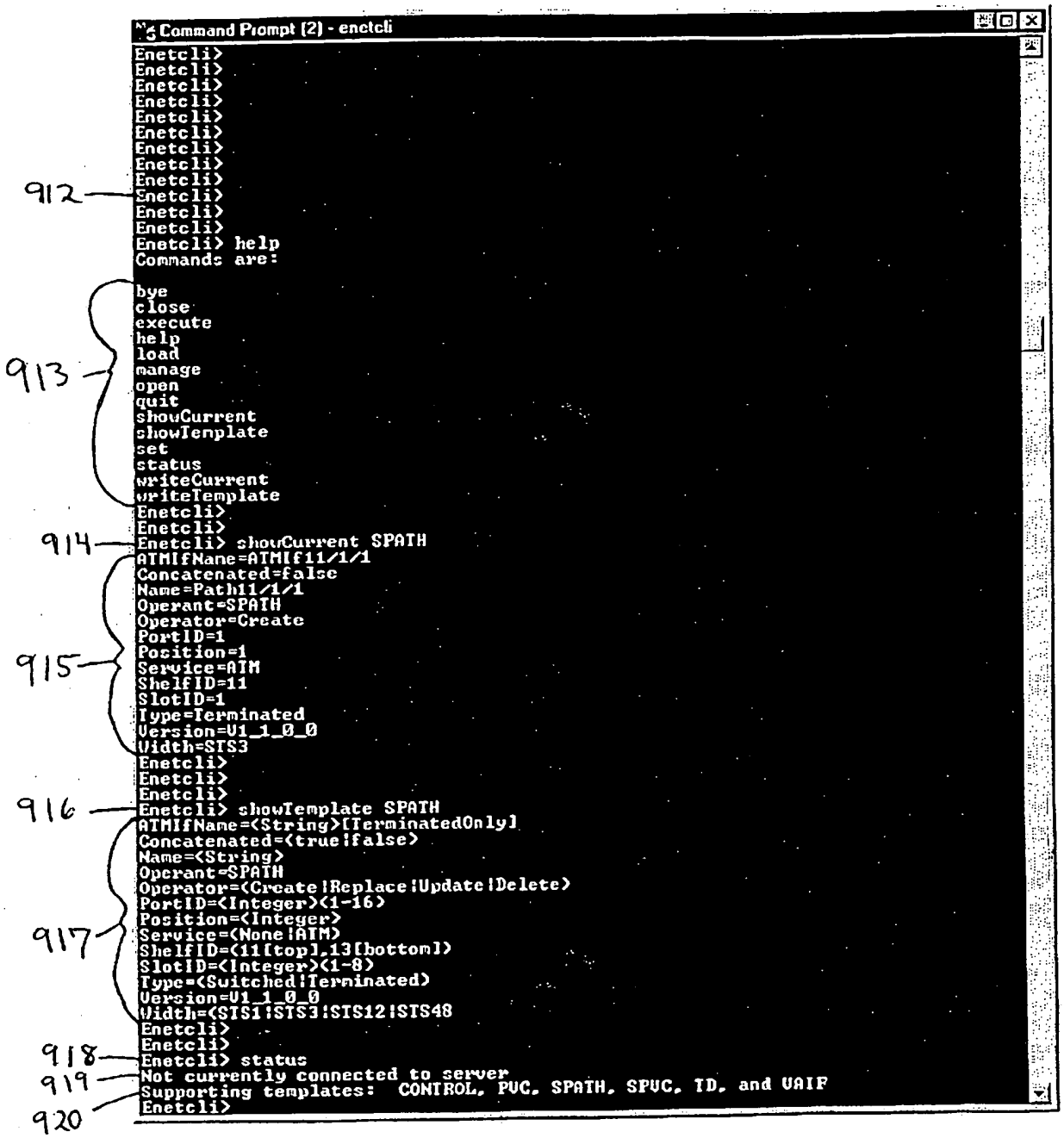
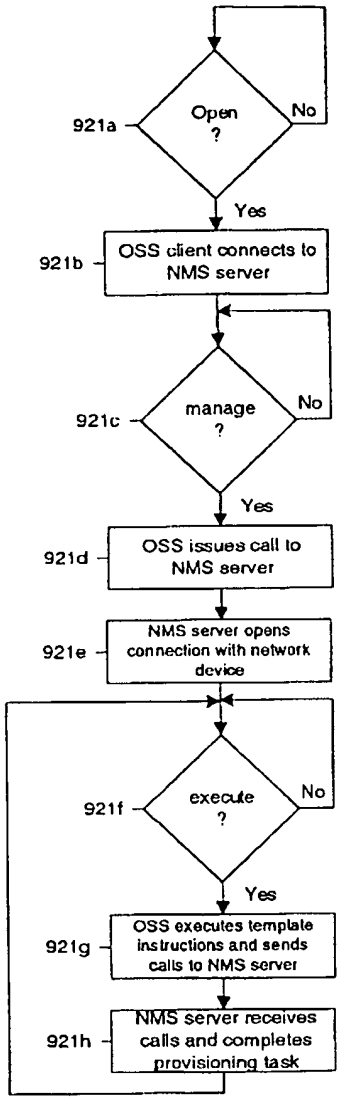


Fig. 3i

0015-0008-0034-0059

Fig. 3j



DOCKET ALARM

Fig. 3K

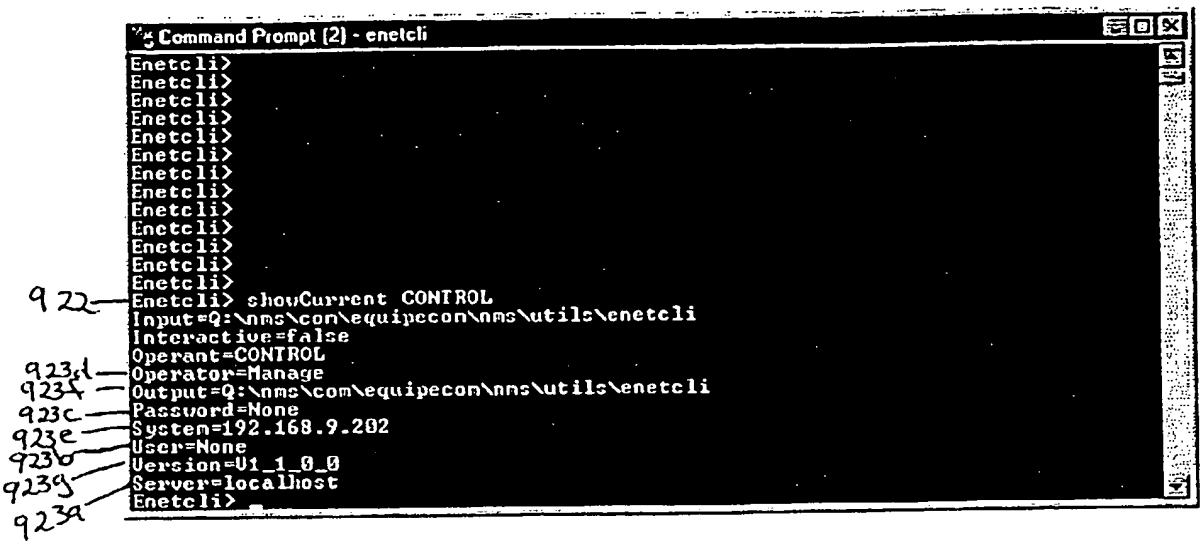


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Fig. 3L

924 BATCH

Operant=BATCH
Operator=Execute
Version=V1_1_0_0
924a — Task1=execute-SPATH
924b — Task2=execute-PVC
924c — Task3=execute-SPVC
924d — Task4=load-SPVC-spvc1
924e — Task5=execute-SPVC
924f — Task6=load-SPVC-spvc2
924g — Task7=execute-SPVC
.
.
.
924g — Task50=set-SPATH-PortID-3
924h — Task51=execute-SPATH
924i — Task52=set-SPATH-SlotID-2
924j — Task53=execute-SPATH

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Fig. 3M

925

Operant=BATCH
Operator=Execute
Version=V1_1_0_0
925a Task1=execute-CONTROL
925b Task2=execute-SPATH
925c Task3=set-SPATH-PortID-3
925d Task4=execute-SPATH
.
.
.
925e Task61=set-CONTROL-System-192.168.9.201
925f Task62=execute-CONTROL
925g Task63=execute-SPATH
.
.
.
925h Task108=close
925i Task109=set-CONTROL-Server-Server1
925j Task110=set-CONTROL-System-192.168.8.200
925k Task111=execute-CONTROL
925l Task112=execute-SPATH
.
.
.

09/894,200

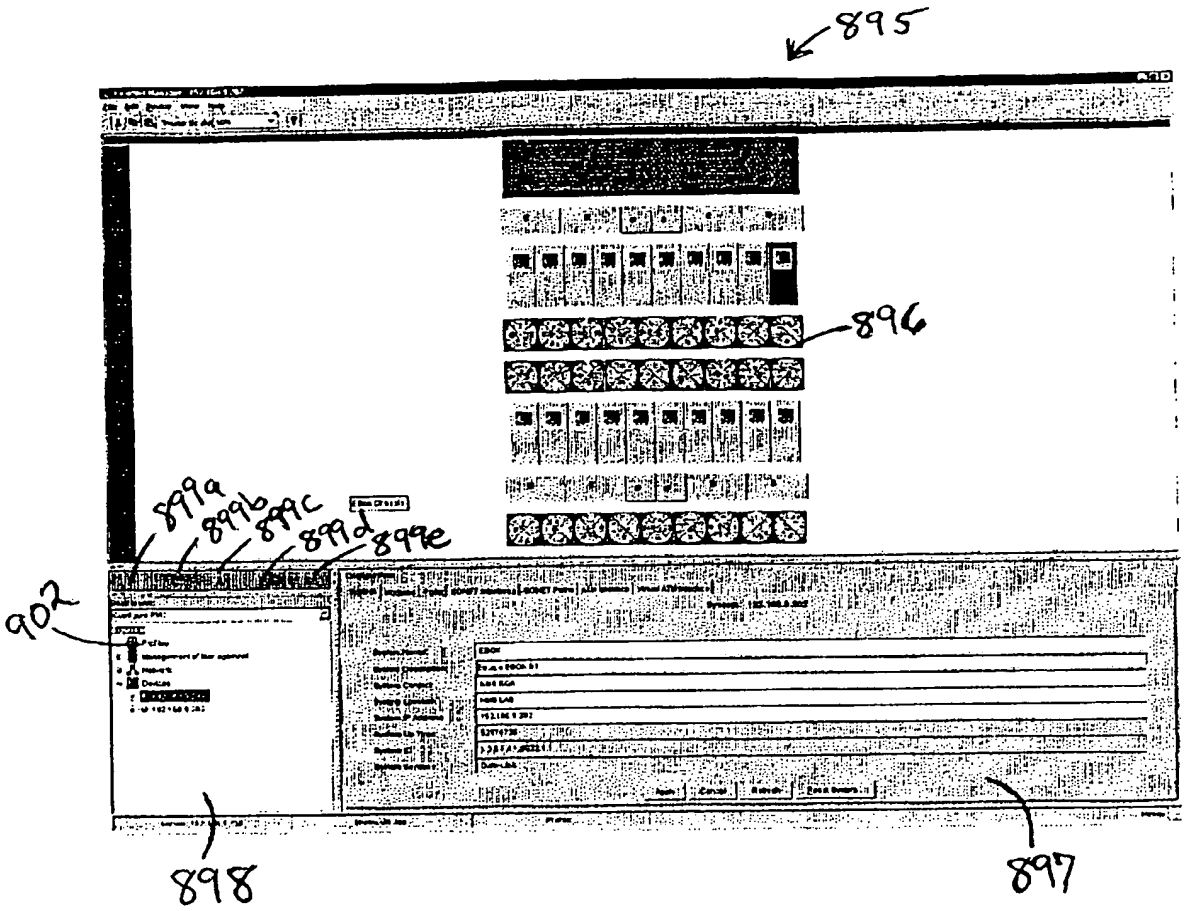


Fig. 4a

09/627,556

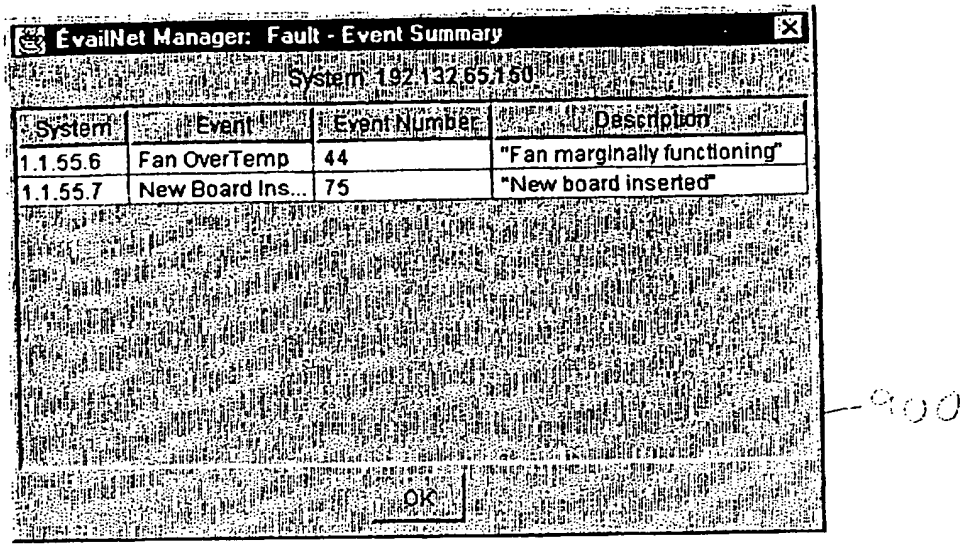


Fig. 4b

DOCKET: 000259.650

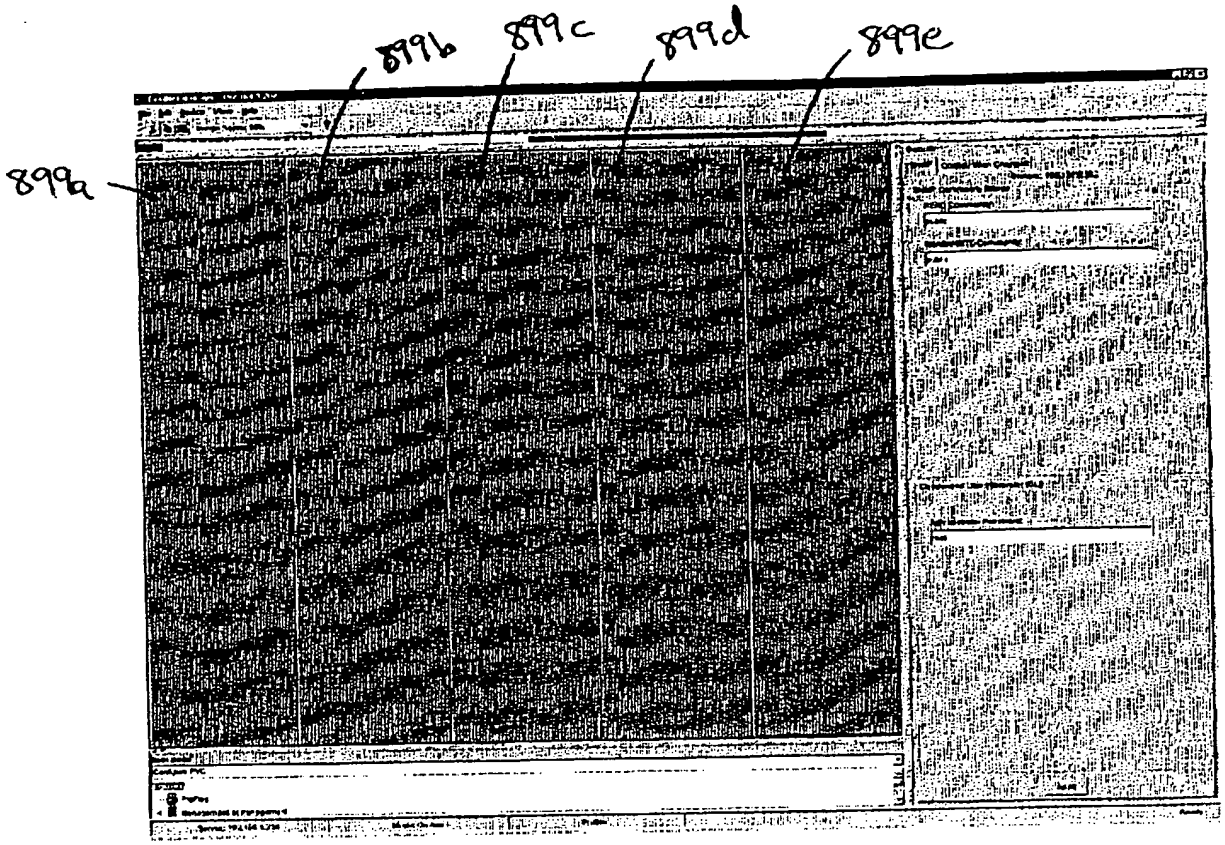


Fig. 4c

DOCKET: 008/2960

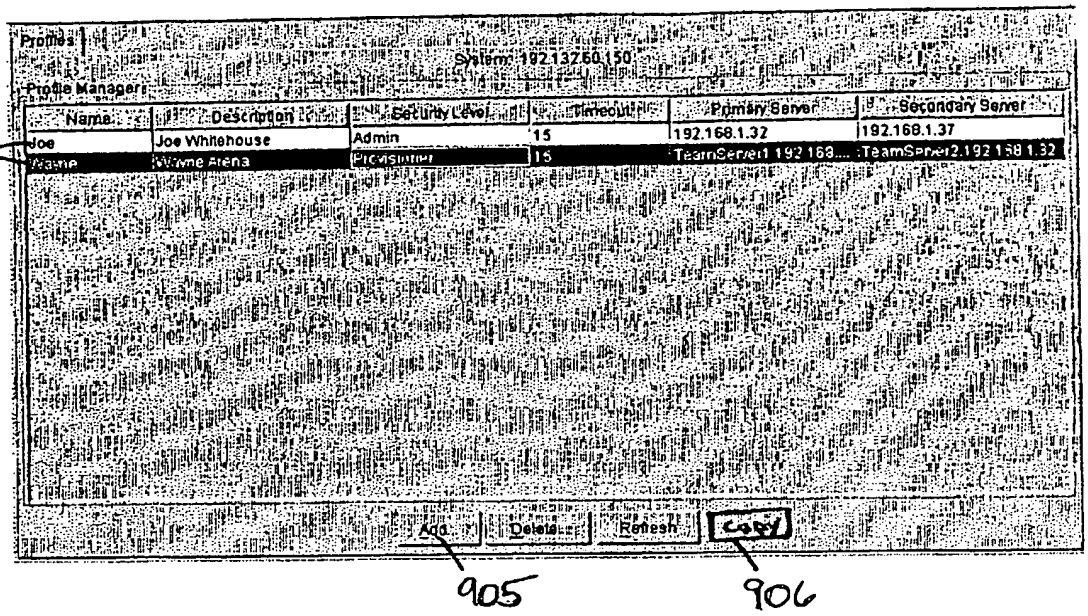
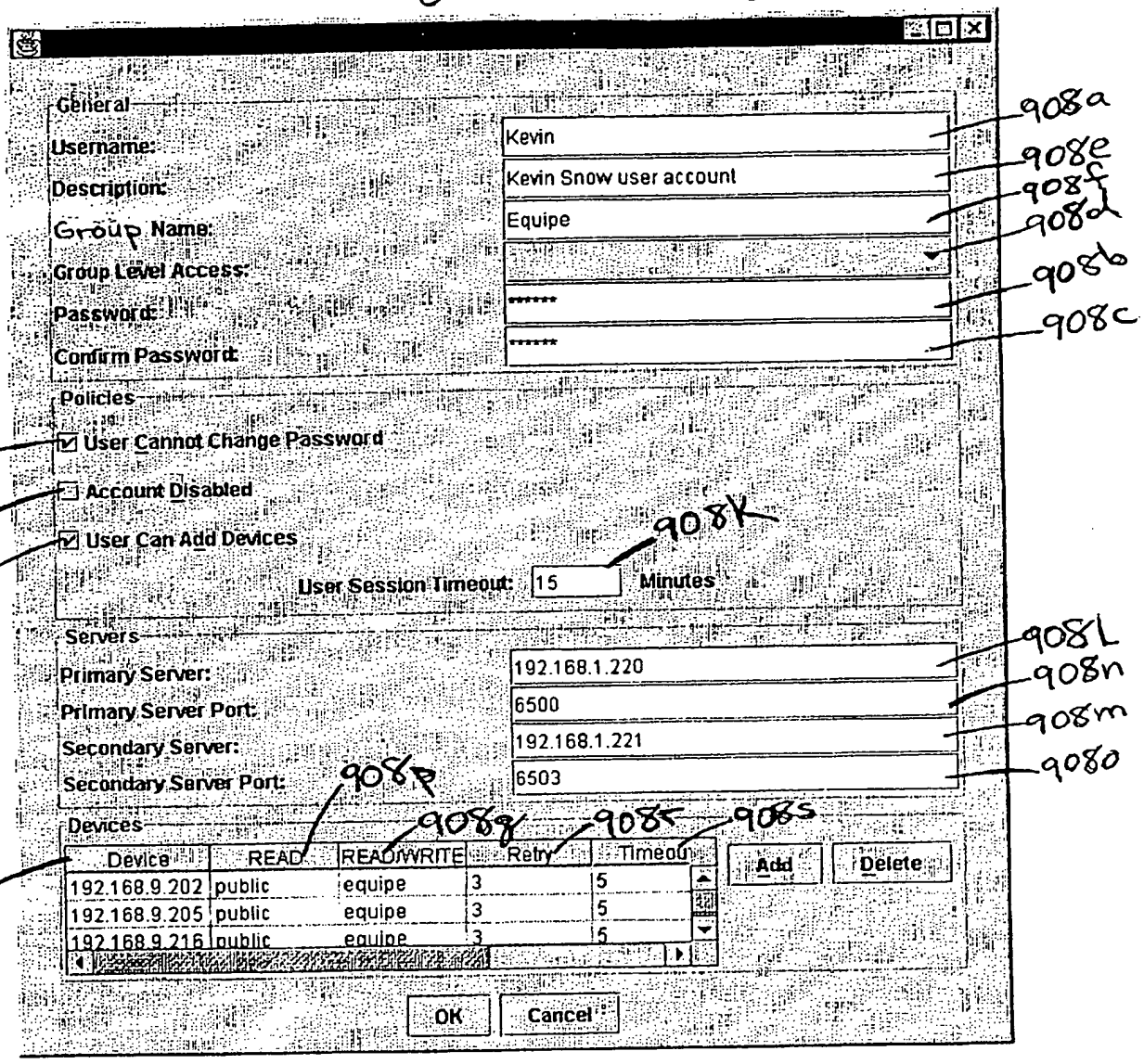


Fig. 4d

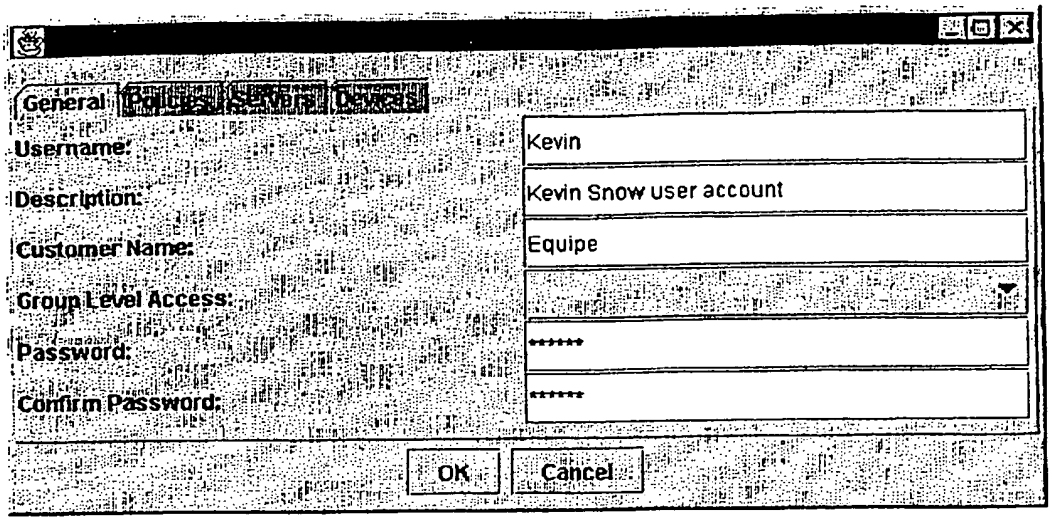
DOCKET ALARM

Fig. 4e



DOCKET ALARM

Fig.4f



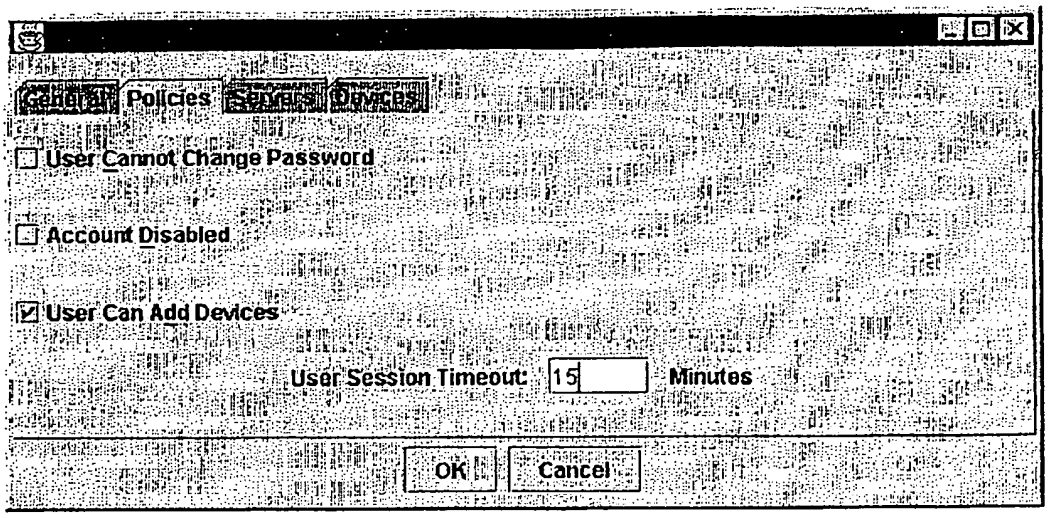


Fig.4g

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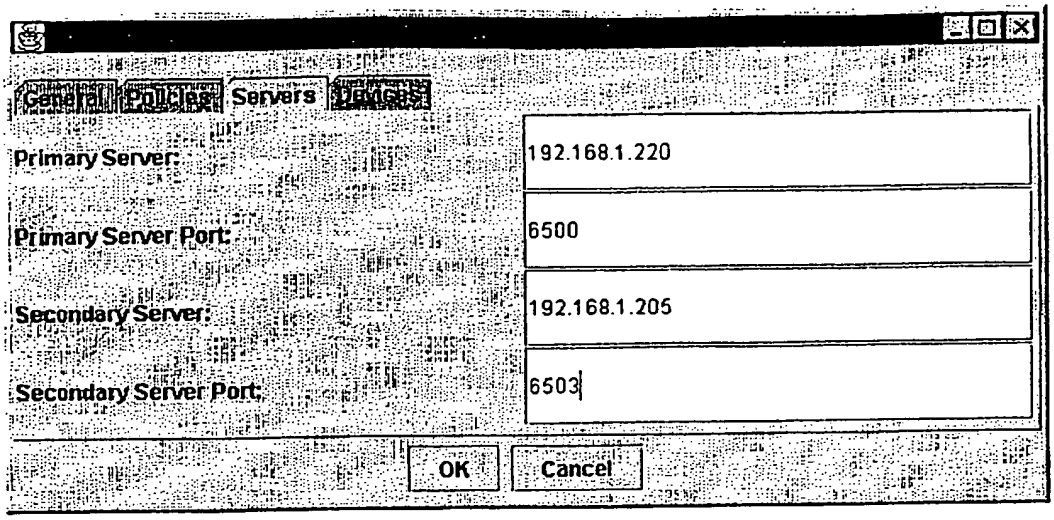
Fig. 4h



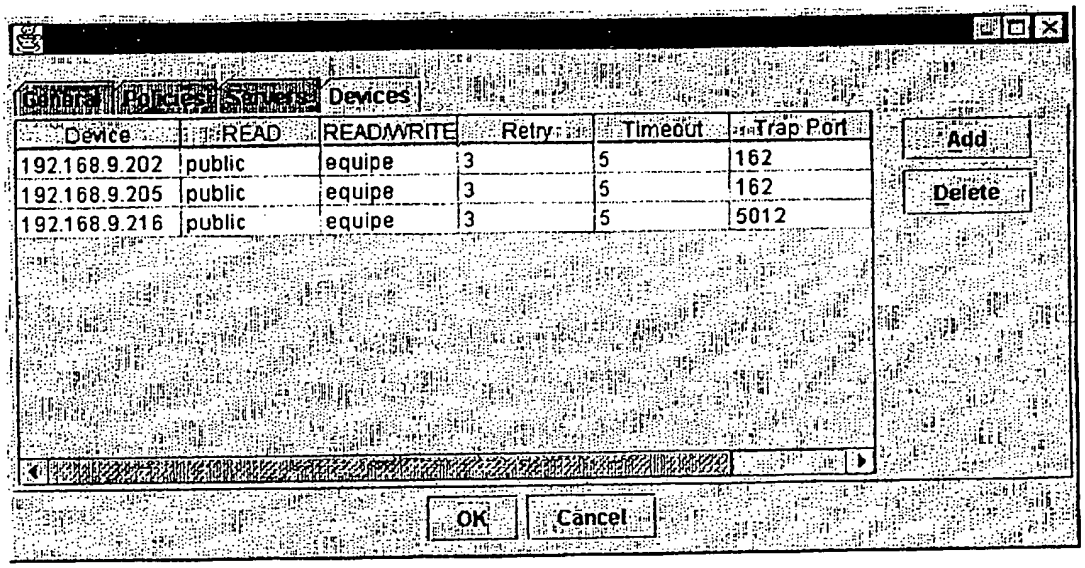


Fig. 4i

DOCKET ALARM

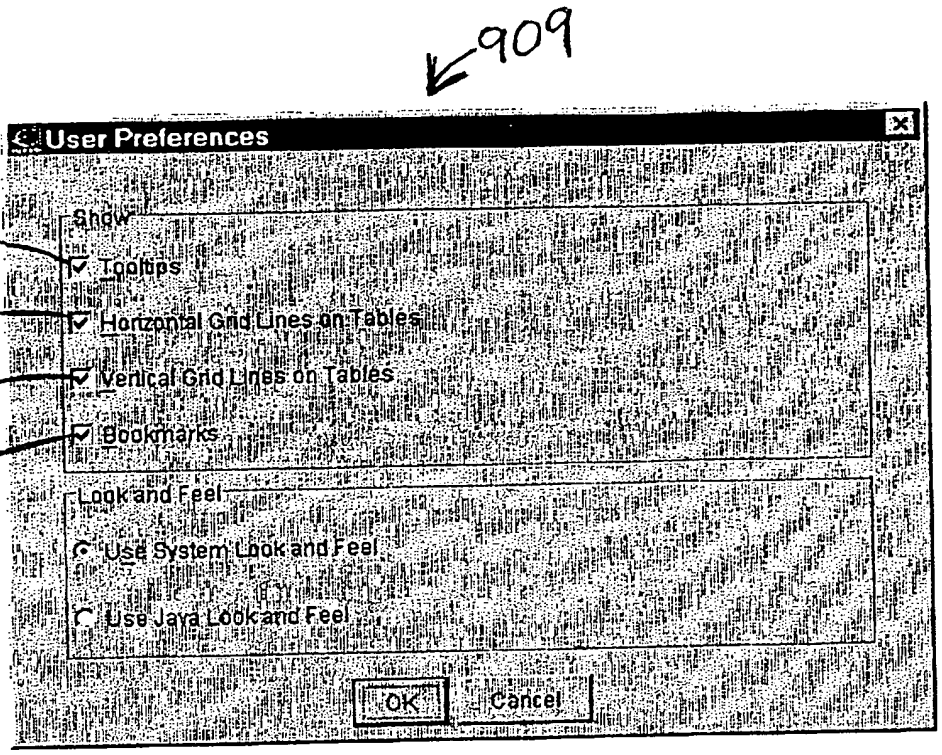
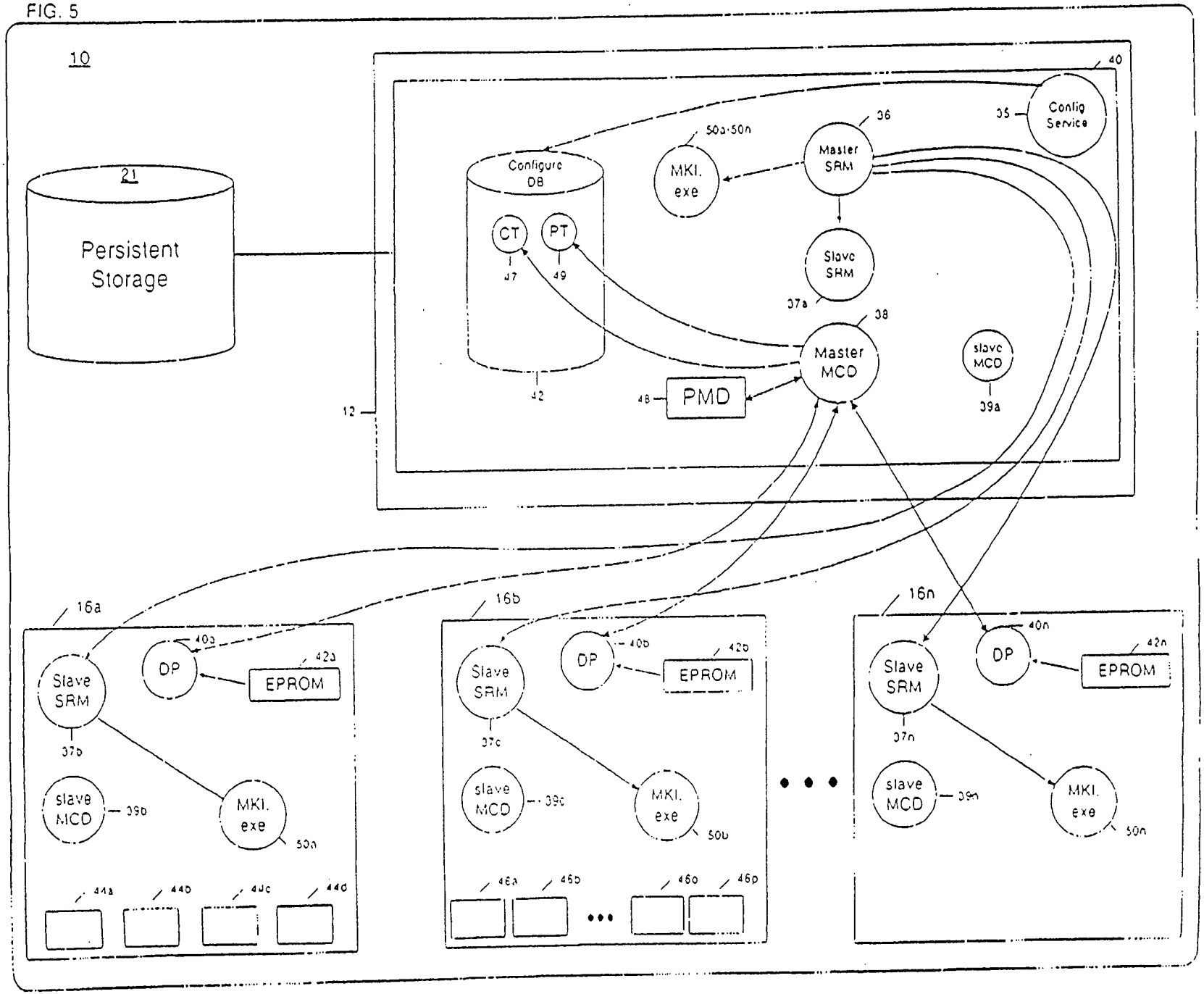


Fig. 4j

DOCKET: 06-3250

FIG. 5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Persistent Storage
40
Config Service
35
36
Master SRM
50a-50n
MKI. exe
Configure DB
CT
PT
47
49
42
Slave SRM
37a
38
Master MCD
slave MCD
39a
48
PMD
12
16a
16b
16n
DP
40a
42a
EPROM
Slave SRM
37b
slave MCD
39b
MKI. exe
50a
44a
44b
44c
44d
40b
42b
37c
39c
50b
46a
46b
46o
46p
40n
42n
37n
39n
50n

CARD TABLE

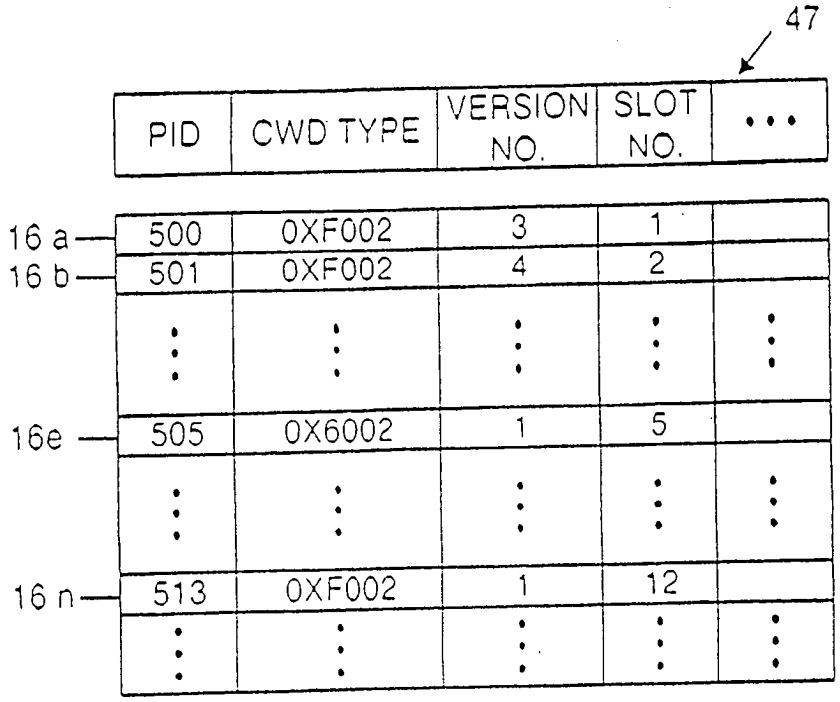


FIG. 6

0078"0082960

PORT TABLE

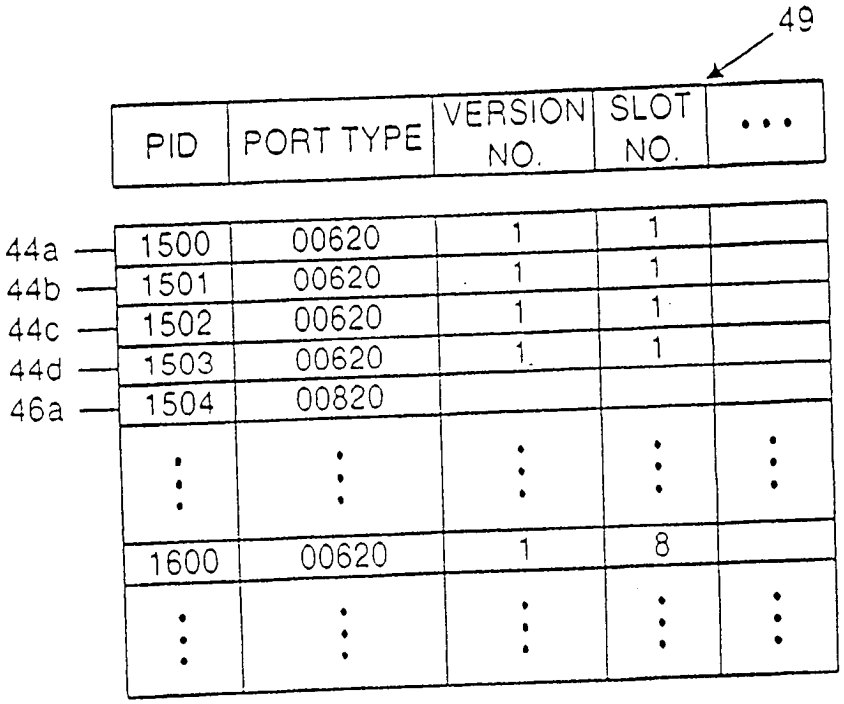


FIG. 7

FIG. 8

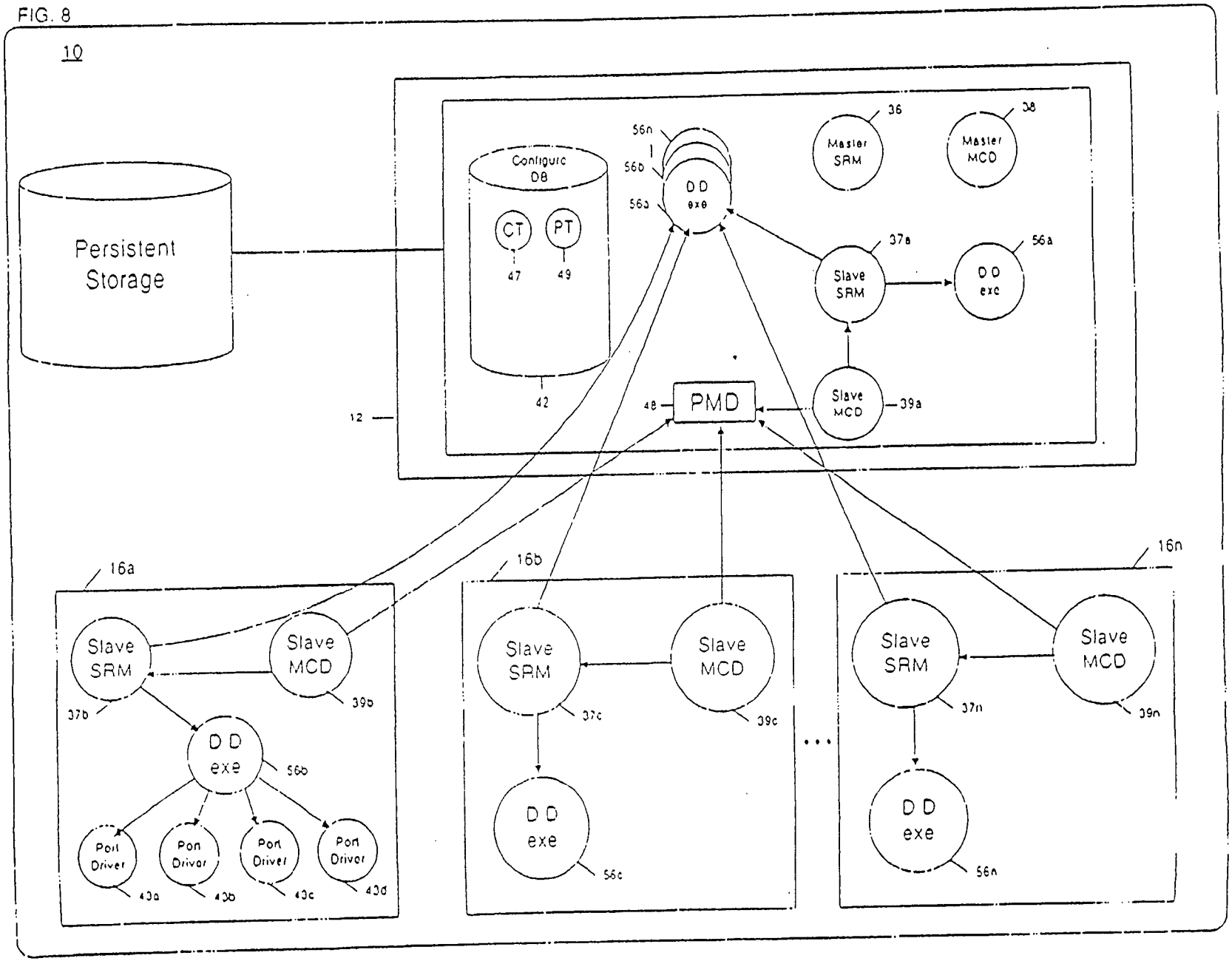

10
Persistent Storage
Configure DB
CT
PT
47
49
42
12
56n
56b
56a
DD exe
Master SRM
36
Master MCD
38
Slave SRM
37a
DD exe
56a
Slave MCD
39a
48
PMD
16a
Slave SRM
37b
Slave MCD
39b
DD exe
56b
Port Driver
43a
Port Driver
43b
Port Driver
43c
Port Driver
43d
16b
Slave SRM
37c
Slave MCD
39c
DD exe
56c
16n
Slave SRM
37n
Slave MCD
39n
DD exe
56n

FIG. 9a

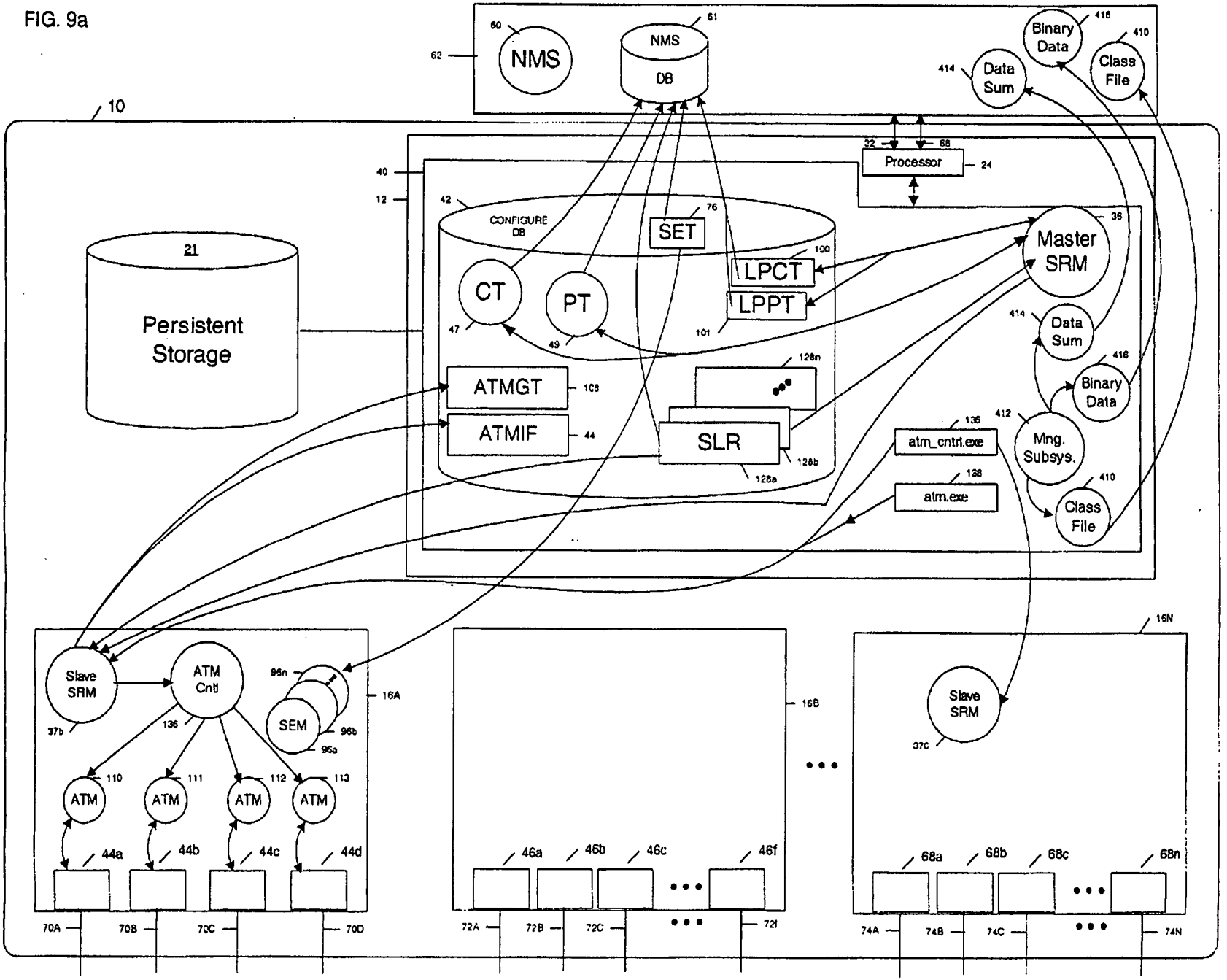

10
NMS
60
62
NMS
DB
61
Binary Data
416
Class File
410
Data Sum
414
Processor
24
32
66
40
12
42
CONFIGURE DB
SET
76
LPCT
100
LPPT
101
CT
47
PT
49
21
Persistent Storage
Master SRM
36
Data Sum
414
Binary Data
416
Mng. Subsys.
412
Class File
410
ATMGT
108
ATMIF
44
SLR
128a
128b
128n
atm_cntrl.exe
136
atm.exe
138
Slave SRM
37b
ATM Cntl
136
SEM
96a
96b
96n
16A
ATM
110
111
112
113
44a
44b
44c
44d
70A
70B
70C
70D
16B
46a
46b
46c
46f
72A
72B
72C
72I
16N
Slave SRM
37c
68a
68b
68c
68n
74A
74B
74C
74N

Fig. 9b

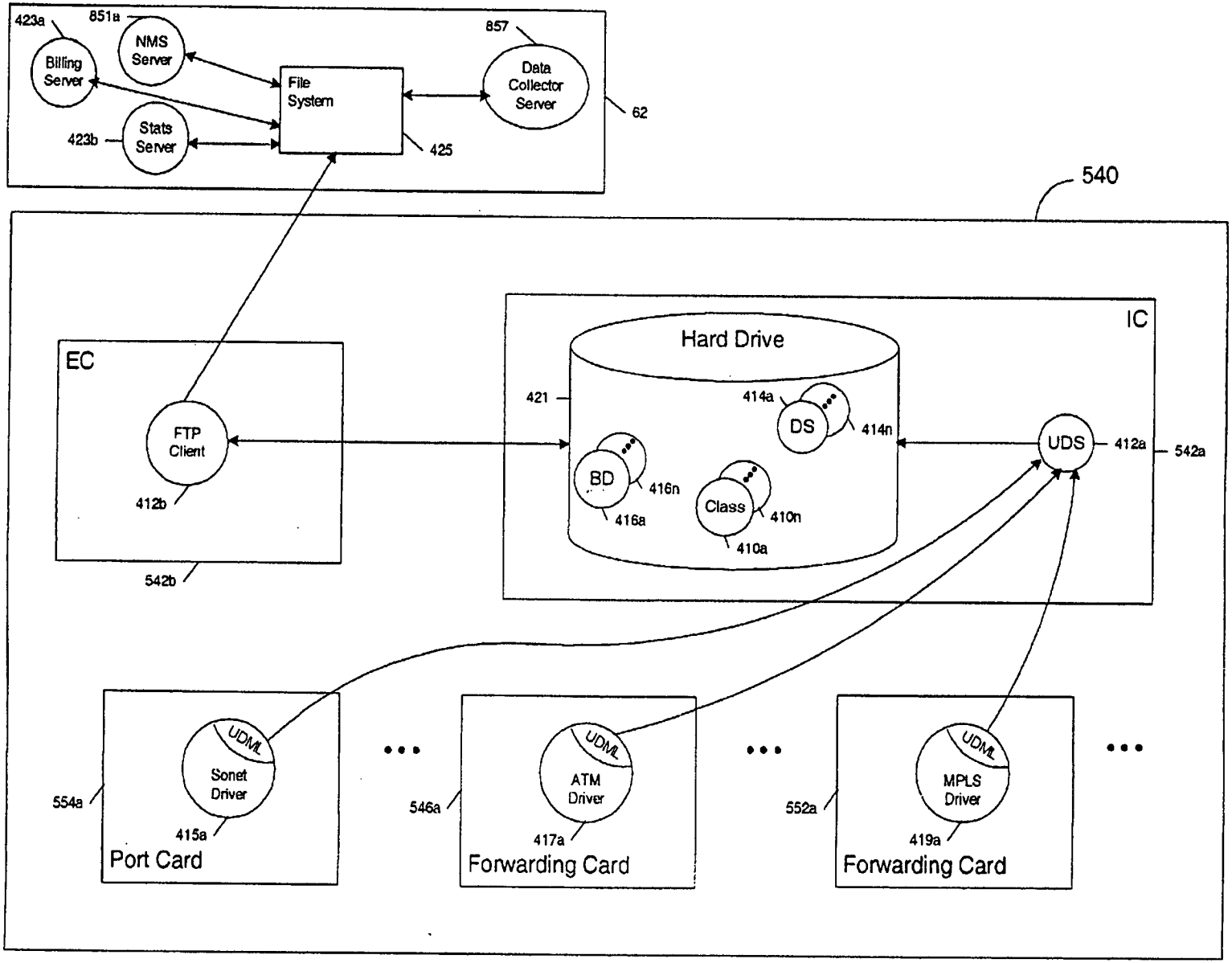

423a
851a
NMS Server
Billing Server
857
Data Collector Server
File System
62
423b
Stats Server
425
540
IC
Hard Drive
421
414a
DS
414n
EC
FTP Client
412b
542b
BD
416n
416a
Class
410n
410a
UDS
412a
542a
UDML
Sonet Driver
554a
415a
Port Card
546a
ATM Driver
417a
Forwarding Card
552a
MPLS Driver
419a
Forwarding Card

FIG. 10

Service Endpoint Table 76

	Service Endpoint #	Port PID
78	1	1500
80	2	1501
82	3	1501
84	4	1501
86	5	1502
88	6	1502
90	7	1503
92	8	1503
94	9	1503
168	10	1502
	⋮	⋮

FIG. 11a

Logical to Physical Card Table 100

	98 LID	102 Primary PID	104 Back-up PID
106	30	500	513
109	31	501	513
	⋮	⋮	⋮

FIG. 11b

Logical to Physical Port Table 101

	98 LID	102 Primary PID	104 Back-up PID
107	40	1500	1600
	⋮	⋮	⋮

Docket No. 50277-2000

FIG. 12

ATM Group Table 108

Group #	Card LID	...
1	30	
2	30	
3	30	
4	30	

FIG. 13

ATM Interface Table 114

ATM IF	ATM Group	SE	...
1	1	1	
2	1	1	
3	1	1	
4	2	2	
5	2	3	
6	2	4	
⋮	⋮	⋮	⋮
12	3	10	
⋮	⋮	⋮	⋮

170

FIG. 14

Software Load Record 128a

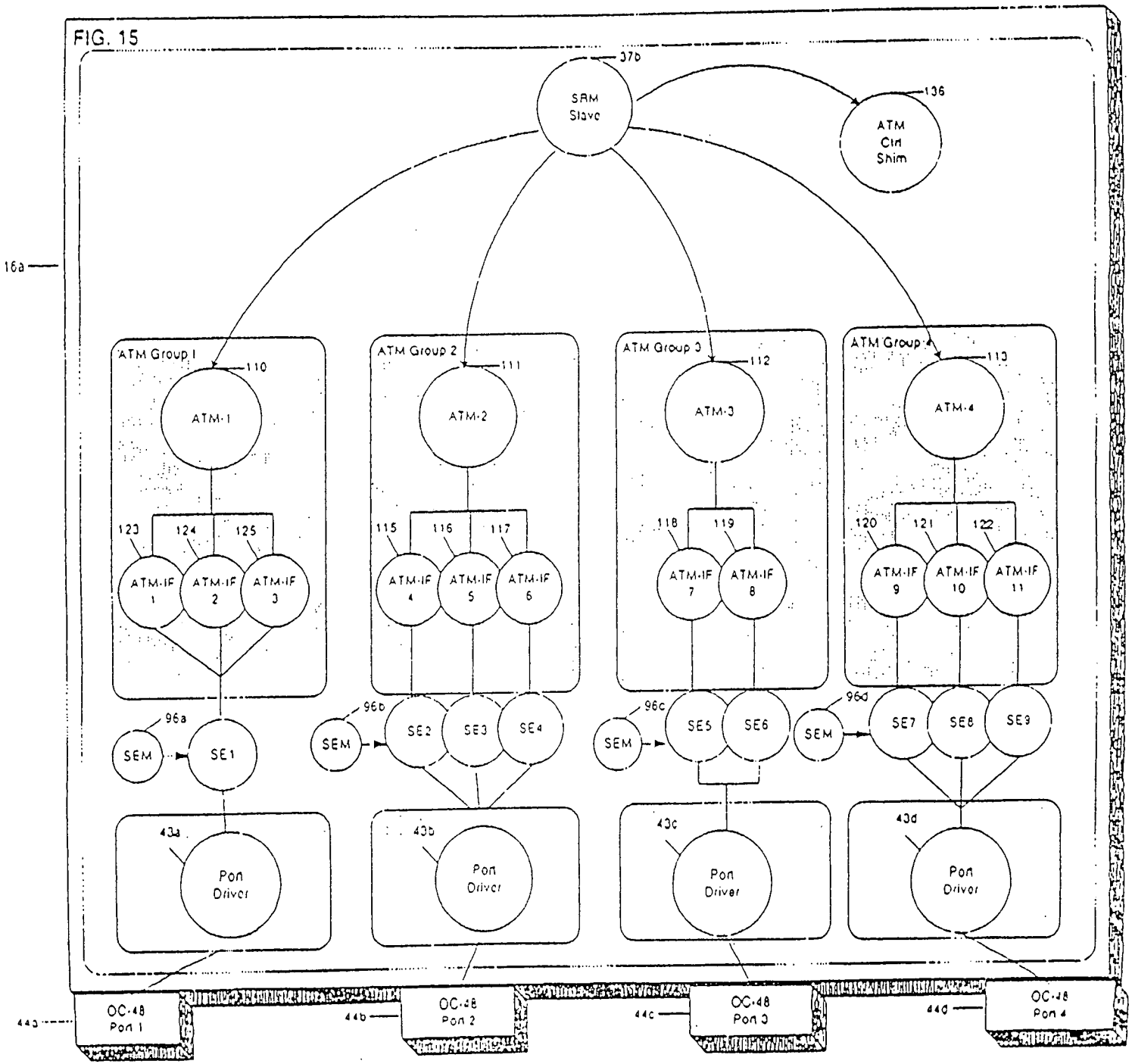
Control Shim	LID
atm-cntl.exe	30

130 134 132

Docket No. 10004.0

00T80'0082960

FIG. 15



0077807 0082860

FIG. 16a

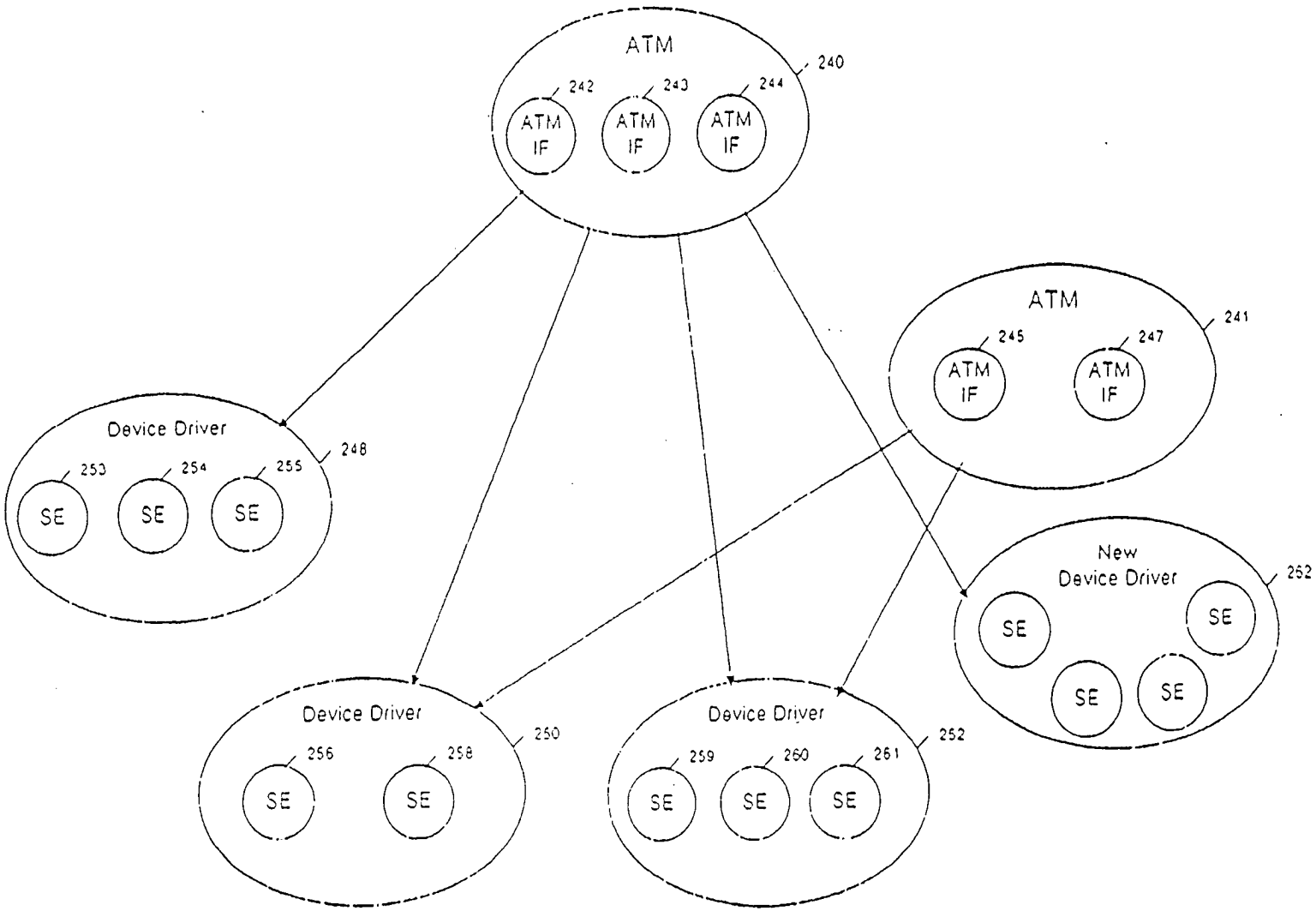
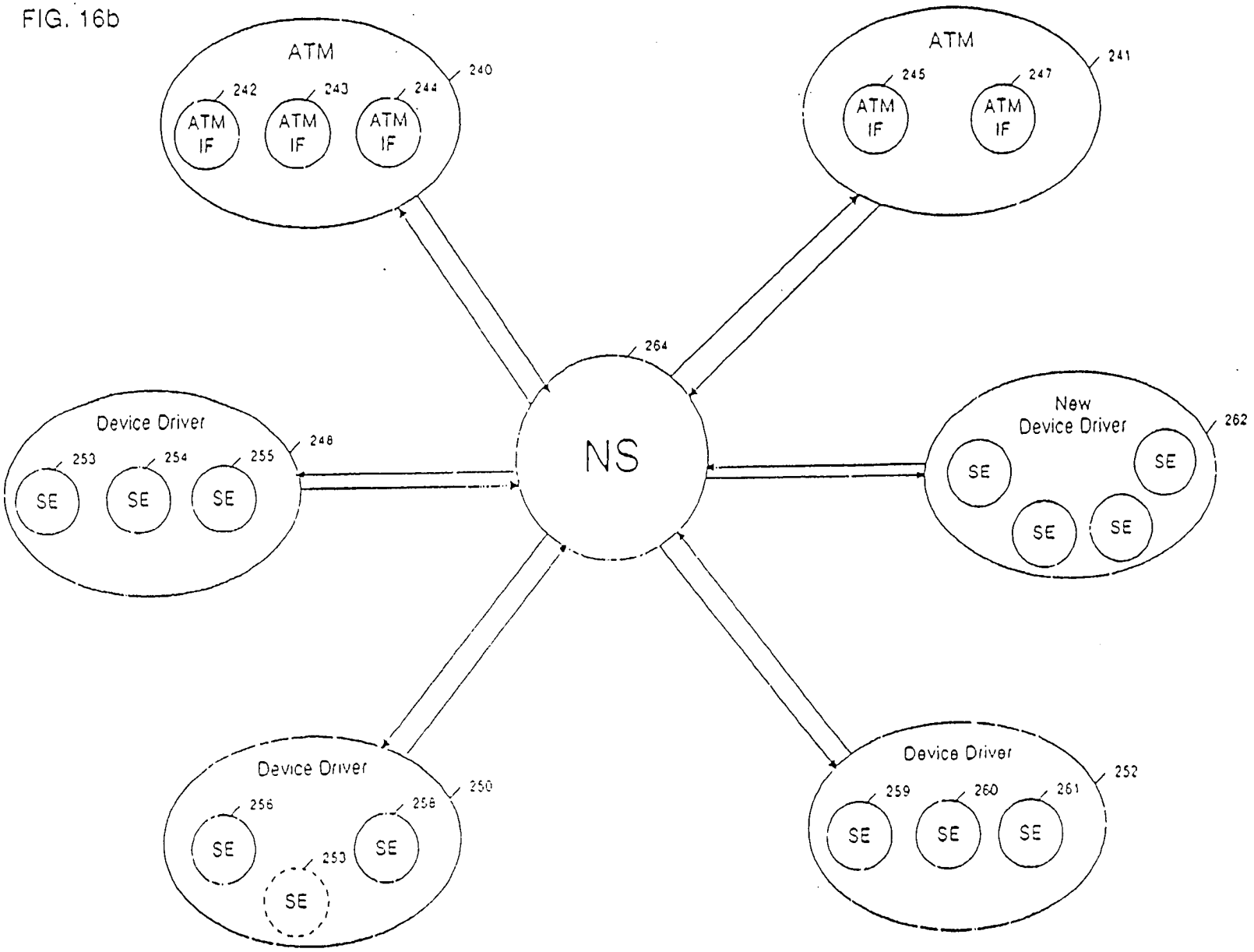


FIG. 16b


ATM
240
242
243
244
ATM IF
ATM IF
ATM IF
ATM
241
245
247
ATM IF
ATM IF
264
NS
Device Driver
248
253
254
255
SE
SE
SE
New Device Driver
262
SE
SE
SE
SE
Device Driver
250
256
258
253
SE
SE
SE
Device Driver
252
259
260
261
SE
SE
SE

00T80"0082E960

FIG. 16c

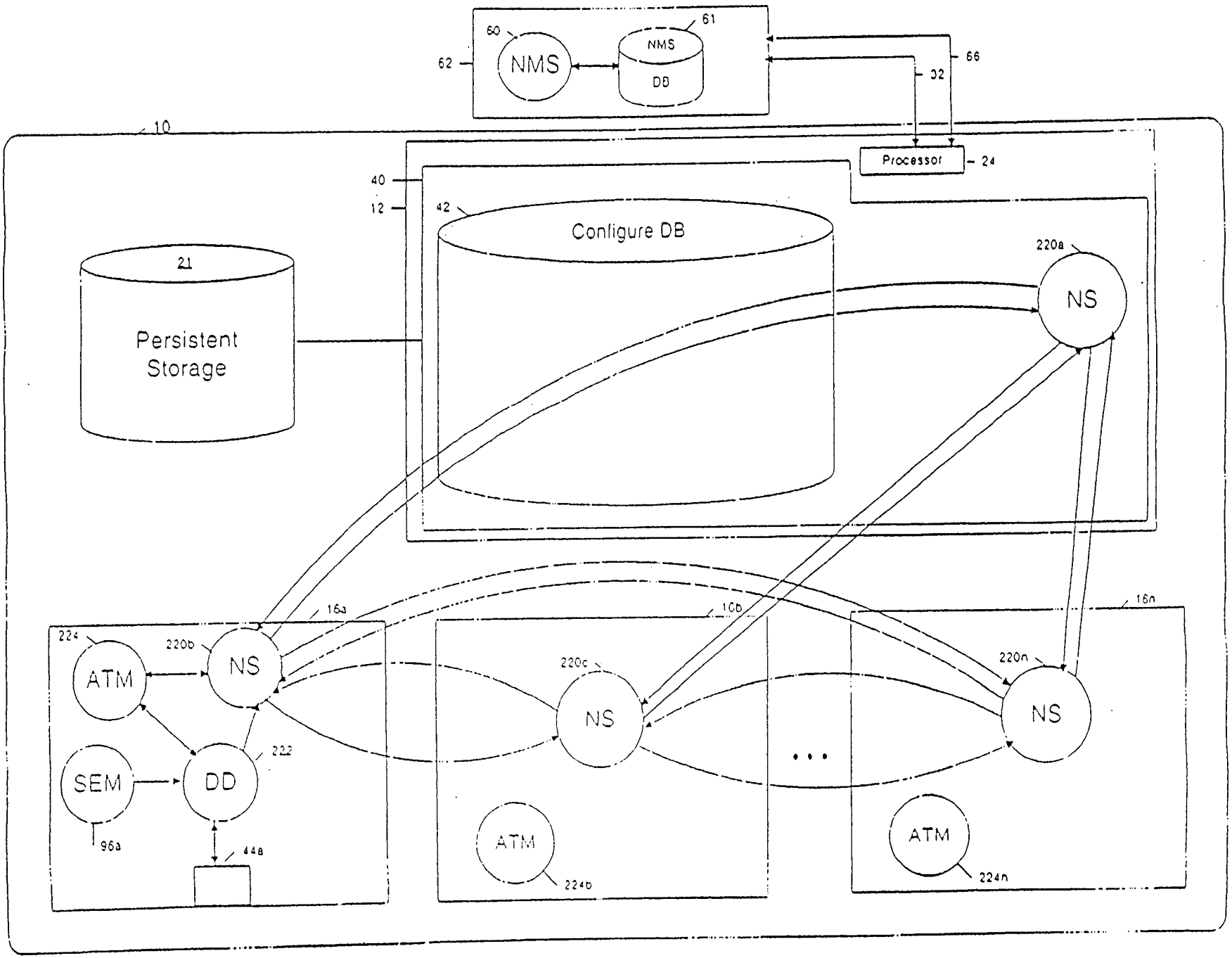
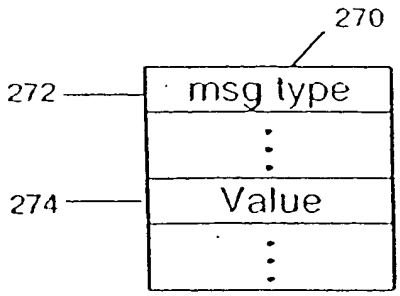


FIG. 16d



DOCKET NO. 9768.0

FIG. 17

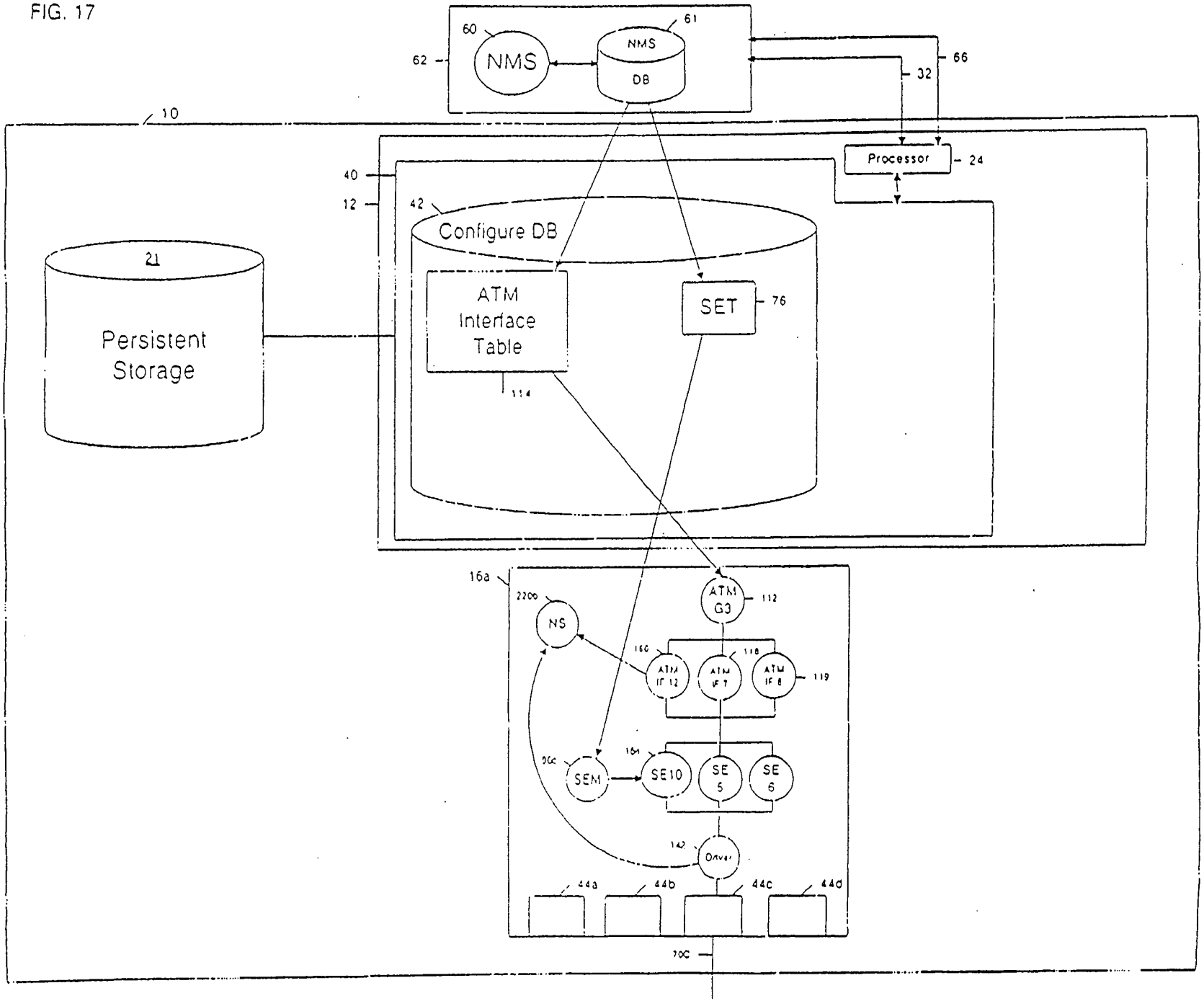

60
NMS
61
NMS
DB
62
66
32
10
Processor
24
40
12
42
Configure DB
21
Persistent Storage
ATM Interface Table
114
SET
76
16a
2200
NS
ATM G3
112
160
ATM IF 12
ATM IF 7
ATM IF 8
118
119
SEM
SE10
SE 5
SE 6
Driver
44a
44b
44c
44d
70c

FIG. 18

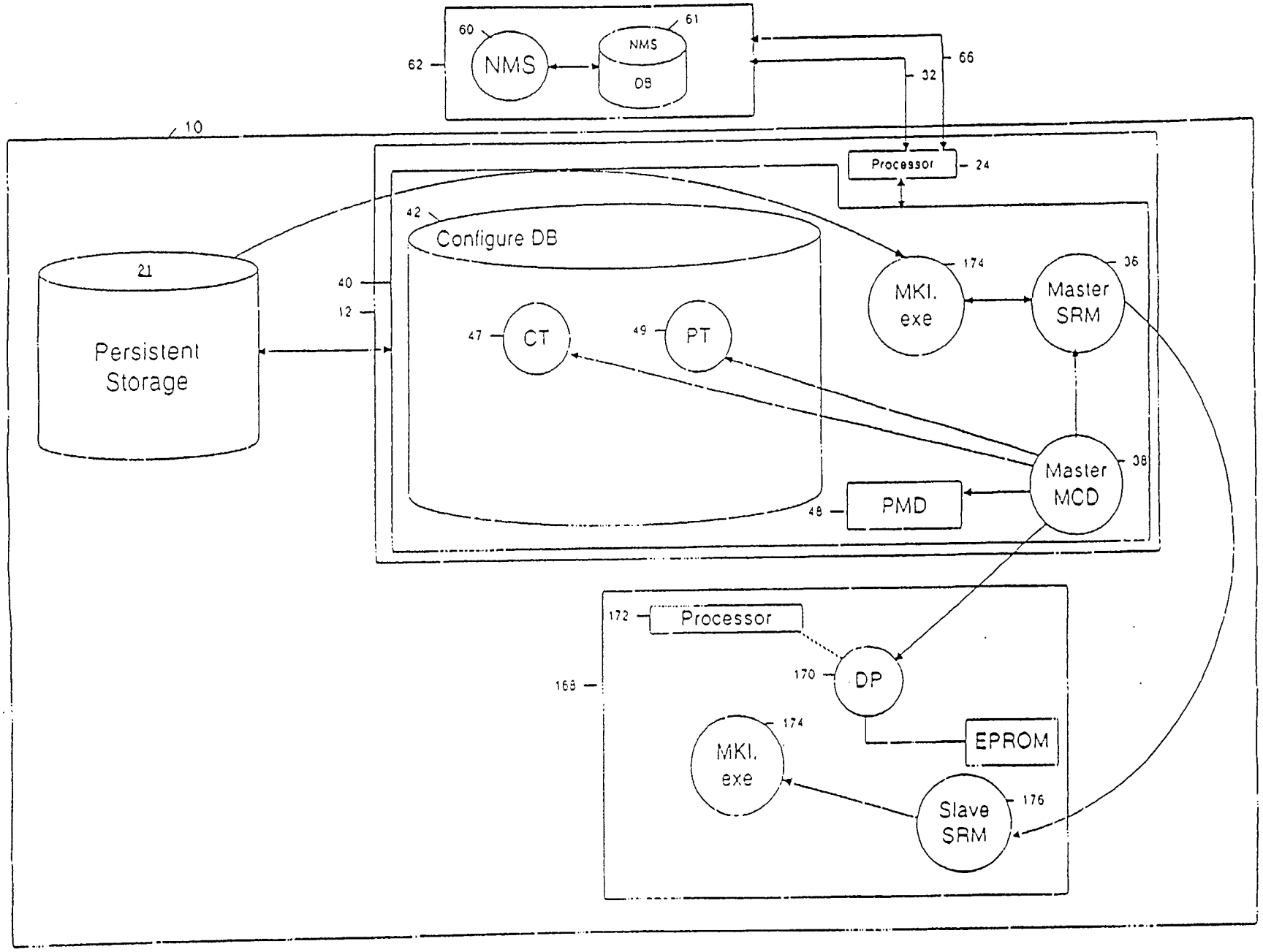

60
NMS
61
NMS
DB
62
66
32
10
Processor
24
42
Configure DB
21
Persistent Storage
40
12
47
CT
49
PT
174
MKI. exe
36
Master SRM
38
Master MCD
48
PMD
172
Processor
170
DP
168
174
MKI. exe
EPROM
176
Slave SRM

FIG. 19

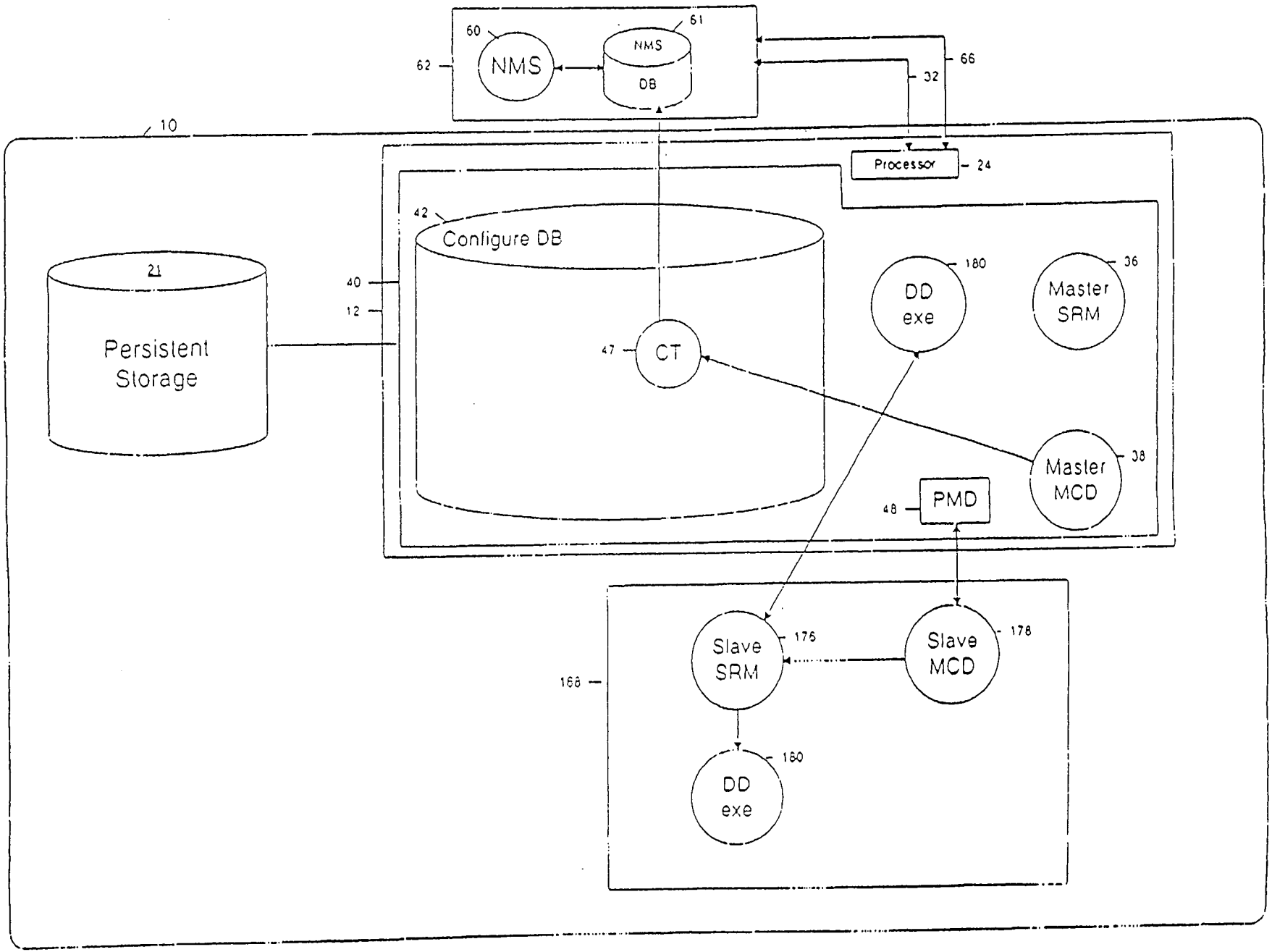

60
61
NMS
NMS
DB
62
66
32
10
Processor
24
42
Configure DB
21
Persistent
Storage
40
12
47
CT
180
DD
exe
36
Master
SRM
38
Master
MCD
48
PMD
168
Slave
SRM
176
Slave
MCD
178
180
DD
exe

FIG. 20

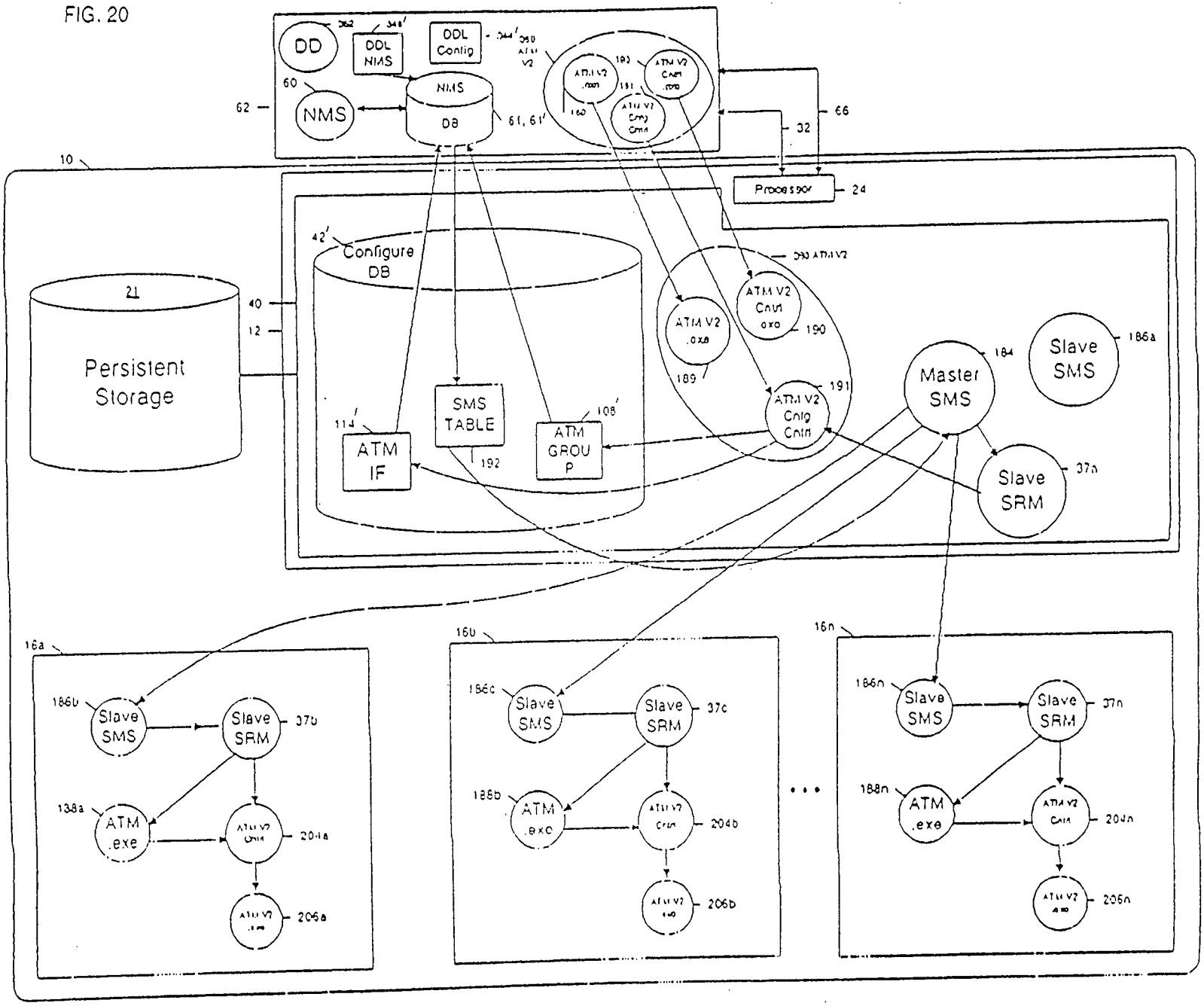

DD
DDL NMS
DDL Config
NMS
NMS DB
ATM V2 .com
ATM V2 Conn .com
ATM V2 Config Conn
62
60
61, 61'
66
32
10
Processor
24
Configure DB
42'
Persistent Storage
21
40
12
ATM V2 .exe
ATM V2 Conn .exe
190
189
191
ATM V2 Config Conn
SMS TABLE
192
ATM GROUP
108'
ATM IF
114'
Master SMS
184
Slave SMS
186a
Slave SRM
37a
16a
186b
Slave SMS
Slave SRM
37b
188a
ATM .exe
ATM V2 Conn
204a
ATM V2 .com
206a
16b
186c
Slave SMS
Slave SRM
37c
188b
ATM .exe
ATM V2 Conn
204b
ATM V2 .com
206b
16n
186n
Slave SMS
Slave SRM
37n
188n
ATM .exe
ATM V2 Conn
204n
ATM V2 .com
206n

FIG. 21

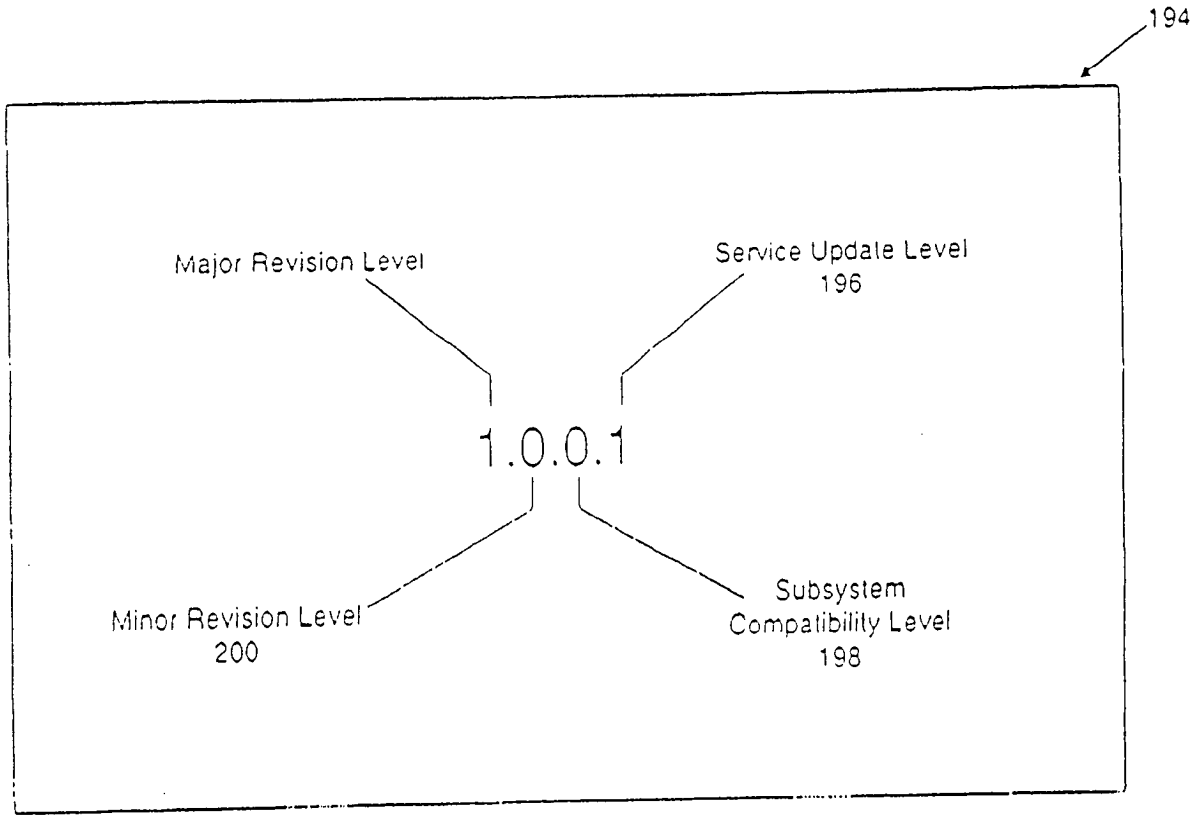

194
Major Revision Level
Service Update Level
196
1.0.0.1
Minor Revision Level
200
Subsystem
Compatibility Level
198

FIG. 22

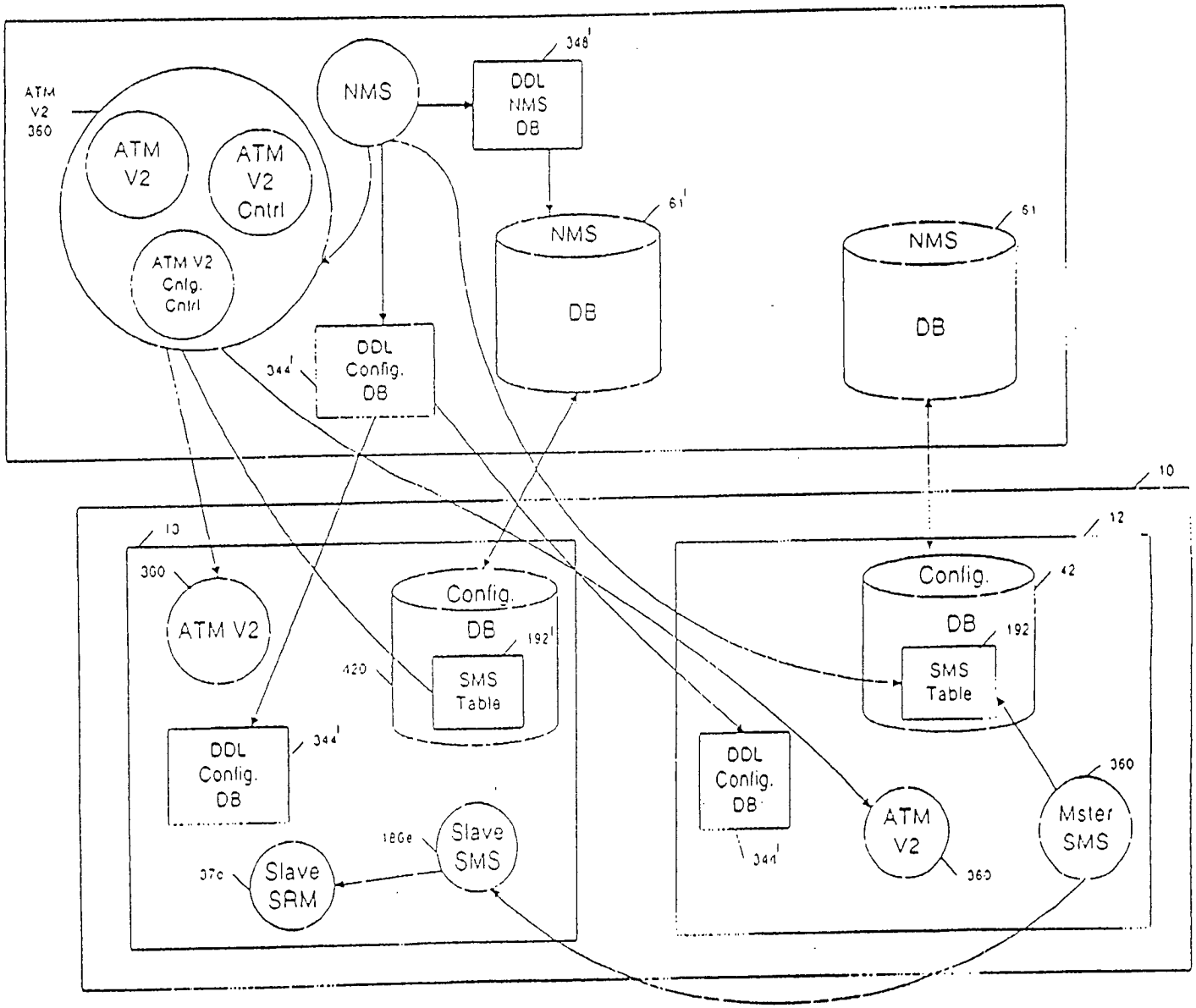
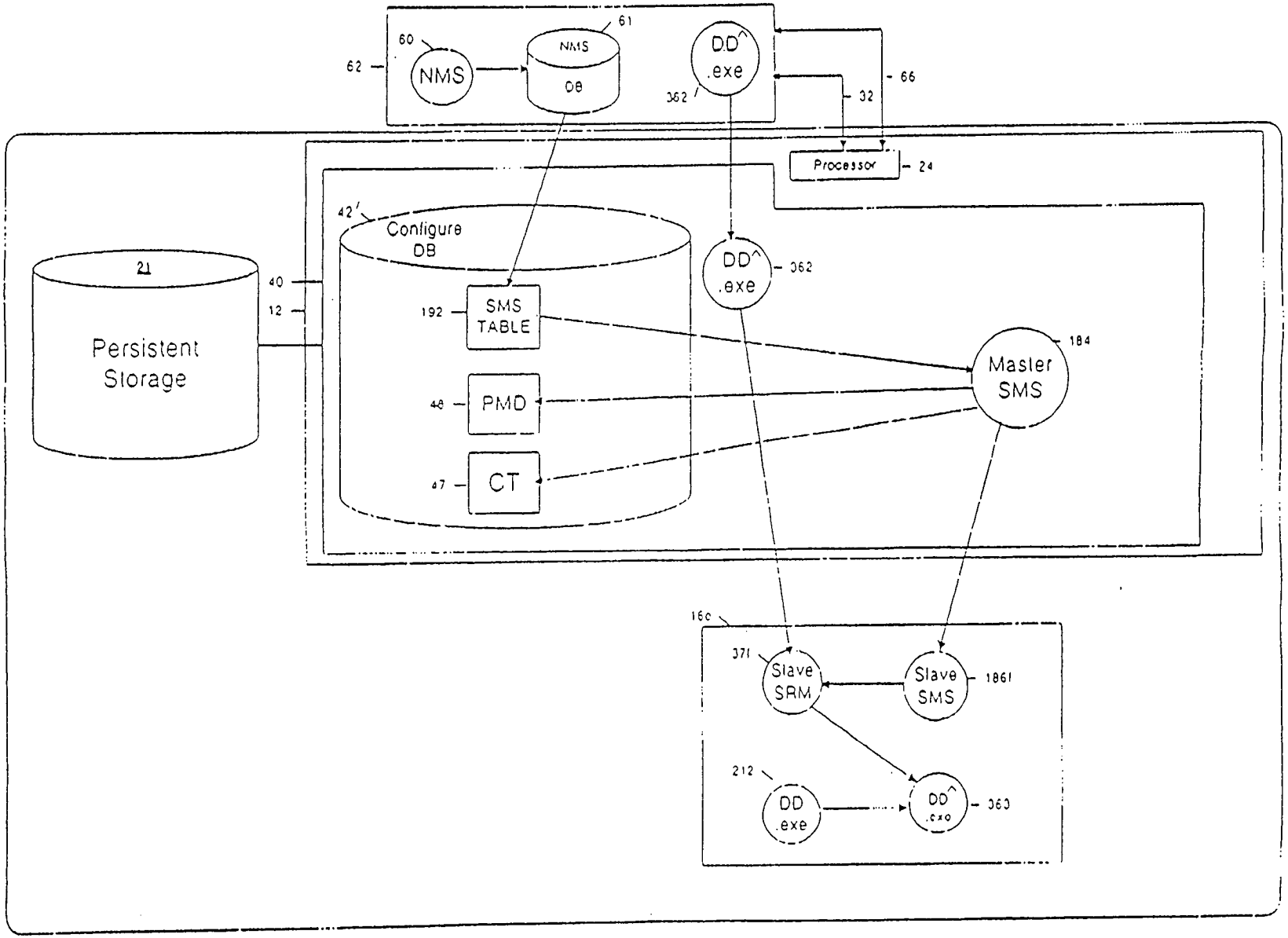

ATM V2 360
ATM V2
ATM V2 Cntrl
ATM V2 Cnfg. Cntrl
NMS
348'
DDL NMS DB
61'
NMS
DB
61
NMS
DB
DDL Config. DB
344'
10
13
360
ATM V2
Config.
DB
192'
420
SMS Table
DDL Config. DB
344'
Slave SMS
186e
Slave SRM
37c
12
Config.
42
DB
192
SMS Table
DDL Config. DB
344'
ATM V2
360
Mster SMS
360

FIG. 23


60
61
62
NMS
NMS
DB
DD
.exe
362
66
32
Processor
24
42'
Configure
DB
21
40
12
Persistent
Storage
DD
.exe
362
192
SMS
TABLE
184
Master
SMS
48
PMD
47
CT
16c
371
Slave
SRM
Slave
SMS
1861
212
DD
.exe
DD
.exe
363

0078"0087E960

FIG. 24

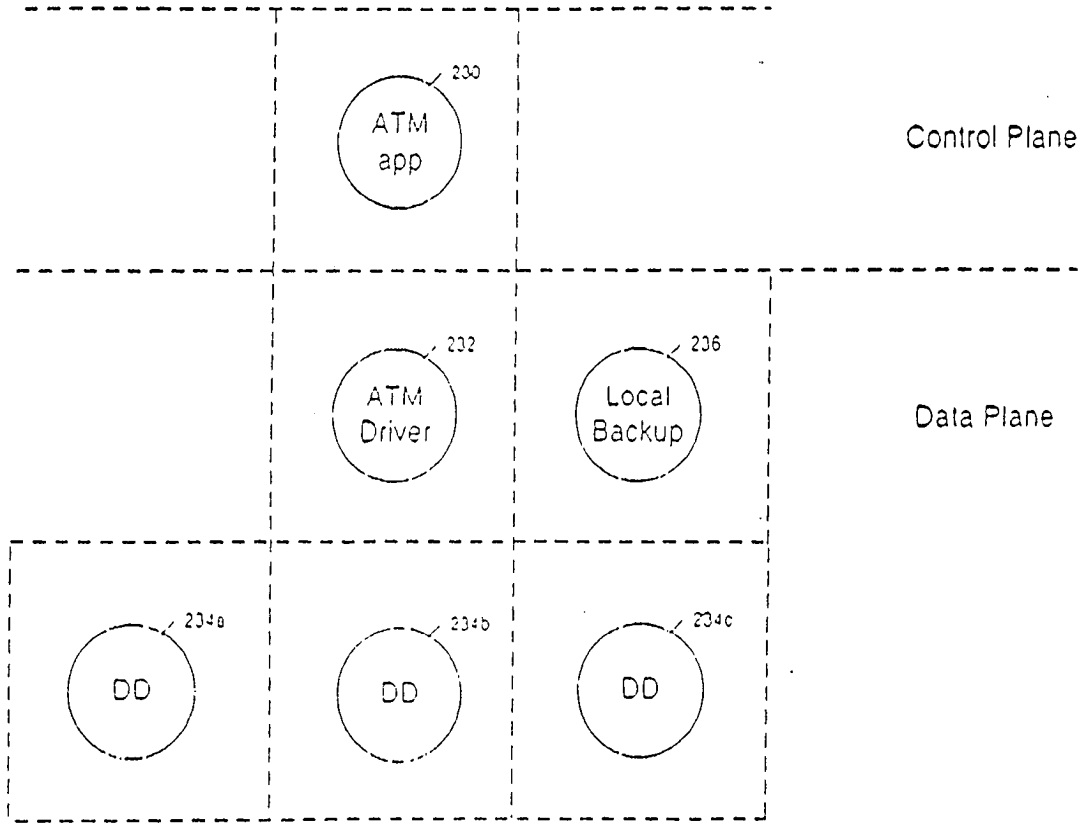


FIG. 25

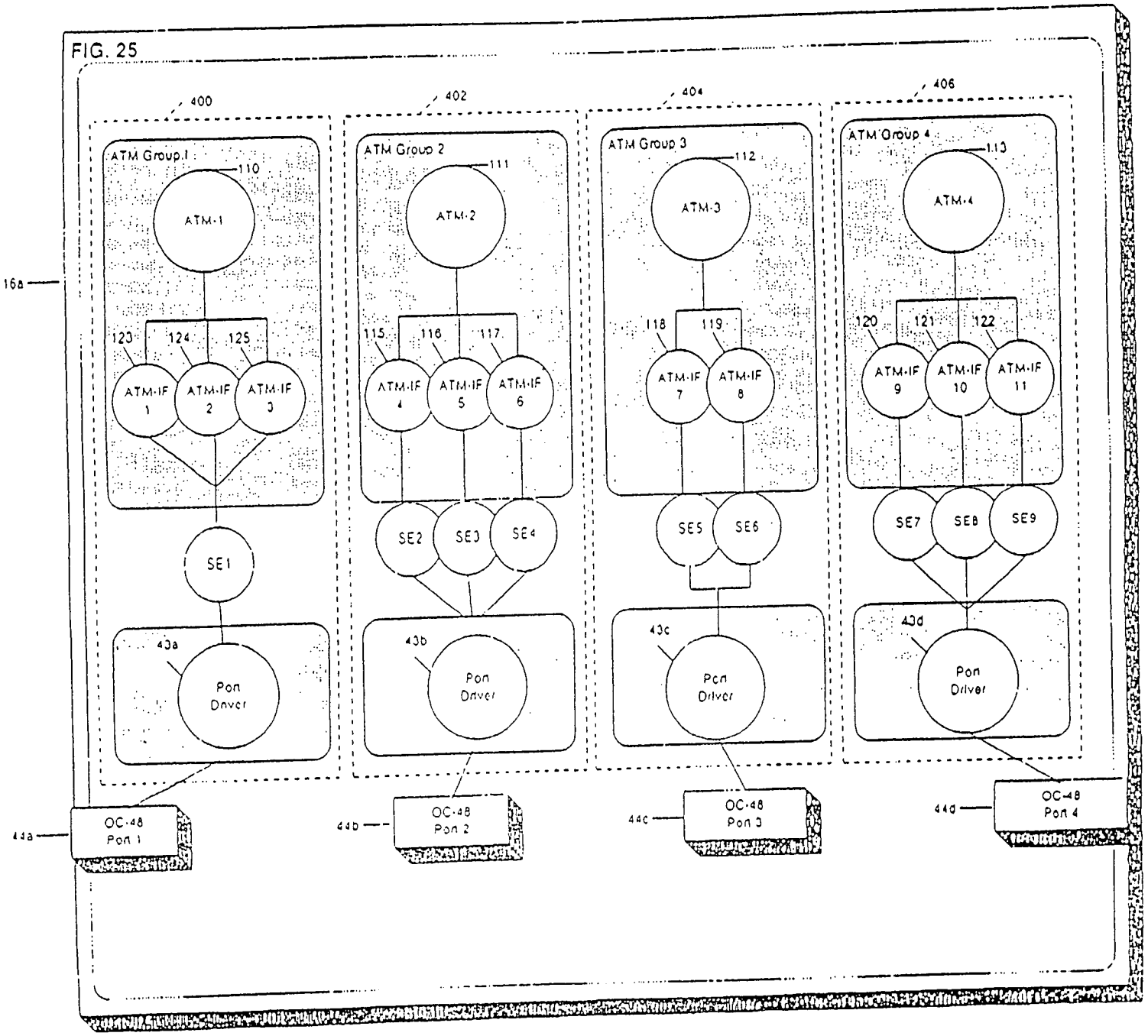

400
402
404
406
ATM Group 1
ATM Group 2
ATM Group 3
ATM Group 4
110
111
112
113
ATM-1
ATM-2
ATM-3
ATM-4
120
121
122
123
124
125
115
116
117
118
119
ATM-IF 1
ATM-IF 2
ATM-IF 3
ATM-IF 4
ATM-IF 5
ATM-IF 6
ATM-IF 7
ATM-IF 8
ATM-IF 9
ATM-IF 10
ATM-IF 11
SE1
SE2
SE3
SE4
SE5
SE6
SE7
SE8
SE9
43a
43b
43c
43d
Pon Driver
Pon Driver
Pon Driver
Pon Driver
16a
44a
44b
44c
44d
OC-48 Pon 1
OC-48 Pon 2
OC-48 Pon 3
OC-48 Pon 4

FIG. 26

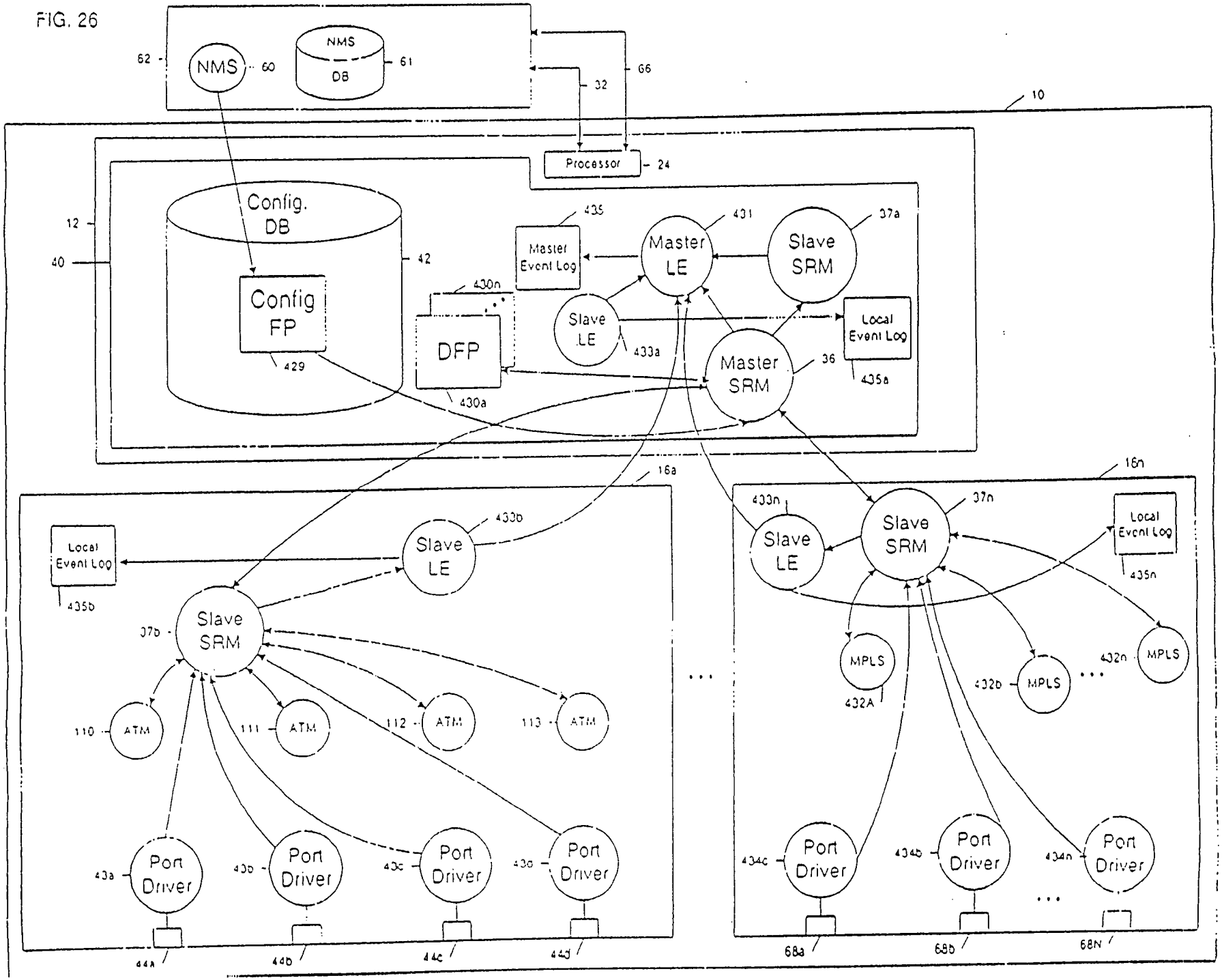
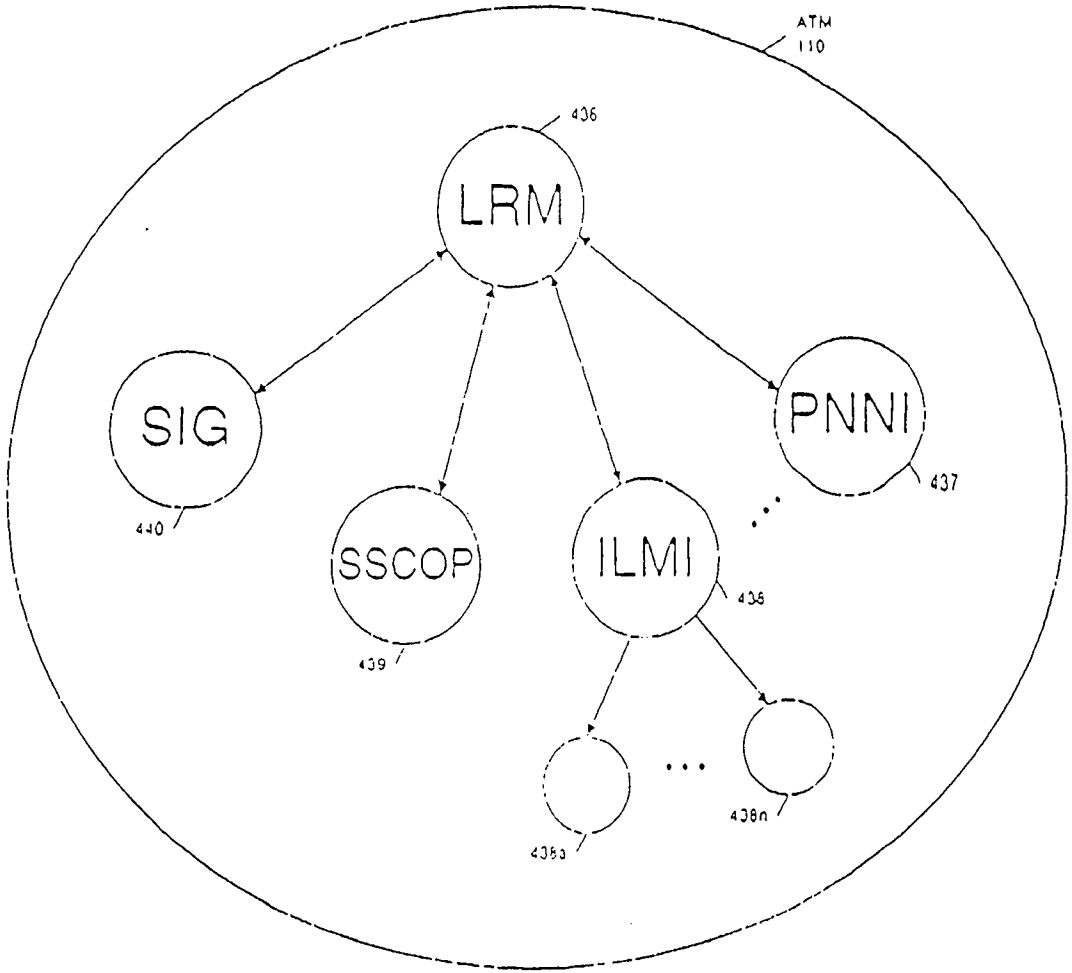

NMS
60
NMS DB
61
62
66
32
10
Processor
24
Config. DB
12
40
42
Config FP
429
DFP
430n
430a
Master Event Log
435
Master LE
431
Slave SRM
37a
Slave LE
433a
Local Event Log
435a
Master SRM
36
16a
16n
Local Event Log
435b
Slave LE
433b
Slave SRM
37b
ATM
110
ATM
111
ATM
112
ATM
113
Port Driver
43a
Port Driver
43b
Port Driver
43c
Port Driver
43d
44a
44b
44c
44d
433n
Slave LE
Slave SRM
37n
Local Event Log
435n
MPLS
432A
MPLS
432b
MPLS
432n
Port Driver
434c
Port Driver
434b
Port Driver
434n
68a
68b
68N

FIG. 27



0078"0082960

FIG. 28

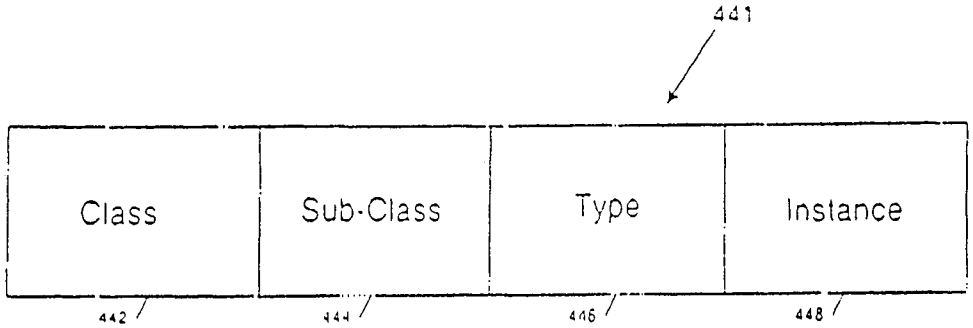


FIG. 29

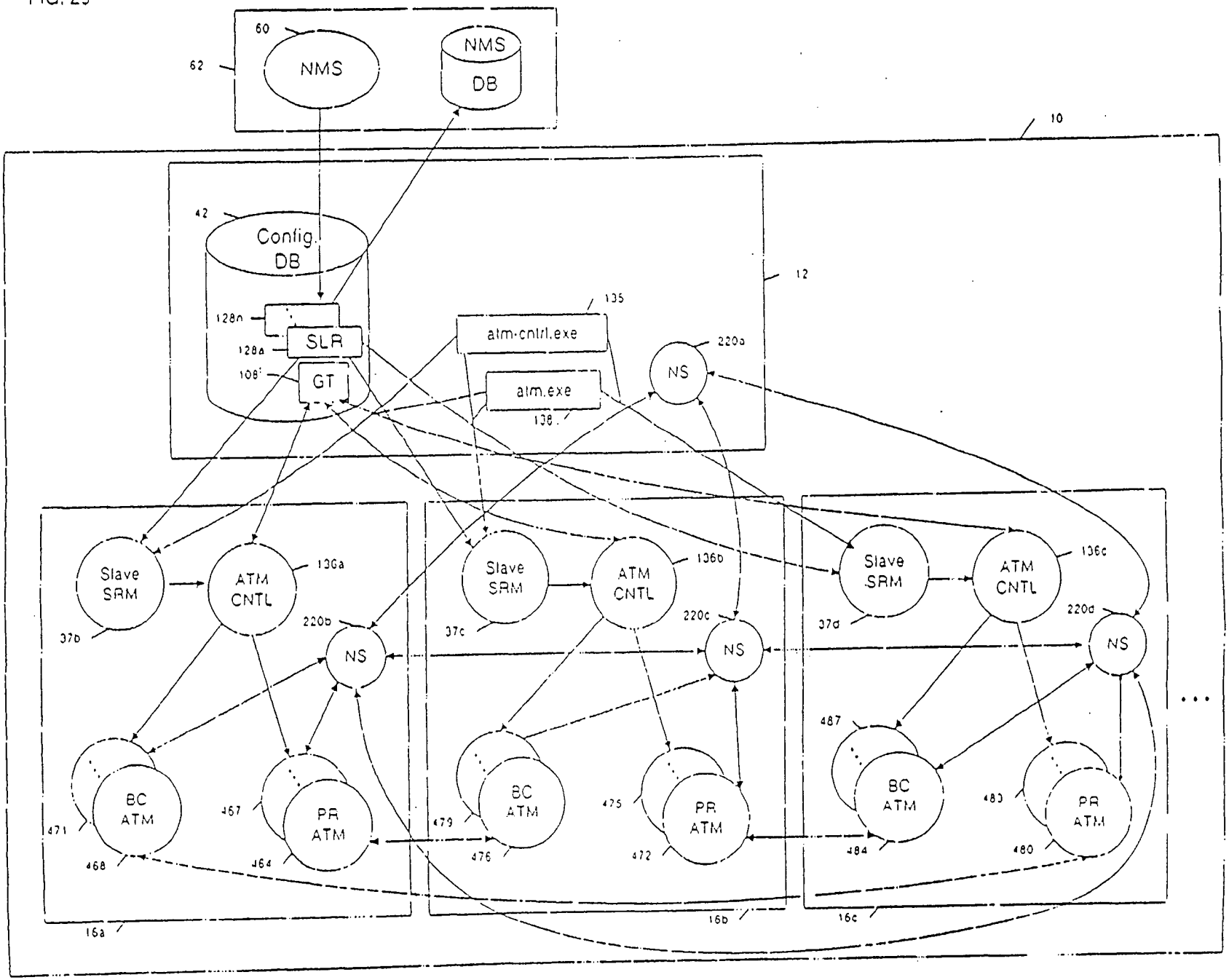

60
NMS
62
NMS
DB
10
42
Config.
DB
12
128n
128a
108'
SLR
GT
135
atm.cntrl.exe
atm.exe
138
NS
220a
Slave
SRM
37b
ATM
CNTL
136a
220b
NS
Slave
SRM
37c
ATM
CNTL
136b
220c
NS
Slave
SRM
37d
ATM
CNTL
136c
220d
NS
BC
ATM
471
468
PR
ATM
467
464
BC
ATM
479
476
PR
ATM
475
472
BC
ATM
487
484
PR
ATM
483
480
16a
16b
16c

FIG.30

Group Table 108′

	Group # (447)	Primary Card LID	Backup Card LID (449)	...
450	1	30	31	
451	2	30	31	
452	3	30	31	
453	4	30	31	
454	5	31	32	
455	6	31	32	
456	7	31	32	
457	8	31	32	
458	9	32	30	
459	10	32	30	
460	11	32	30	
461	12	32	30	
	⋮	⋮	⋮	⋮

Docket: 9-96-009

Fig. 31a

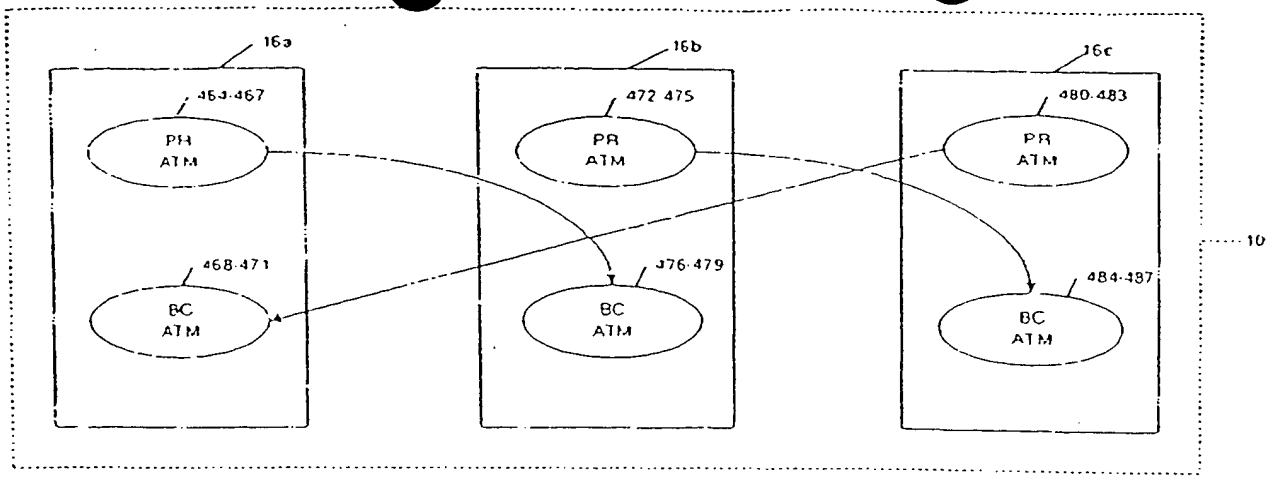


Fig. 31b

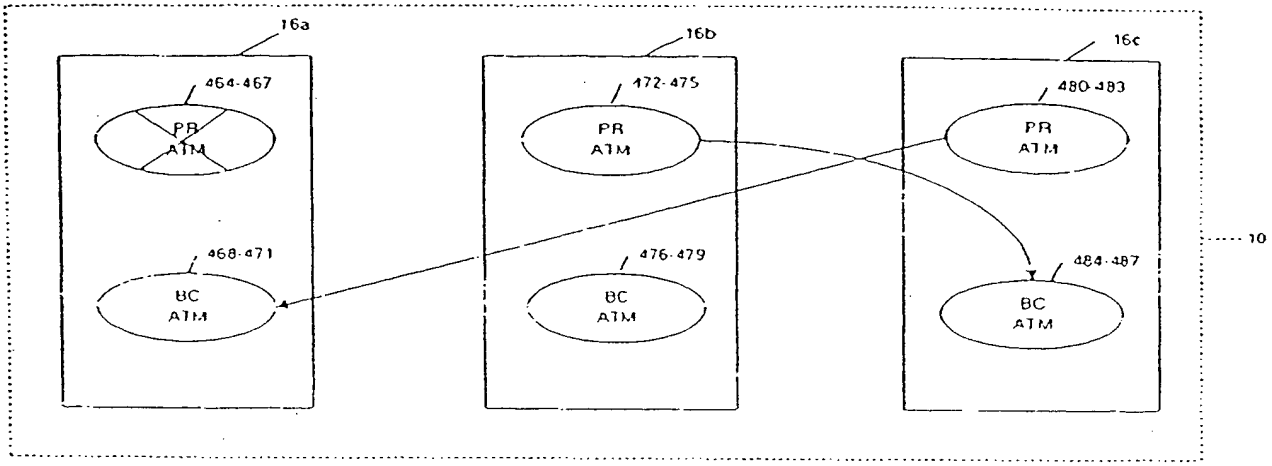
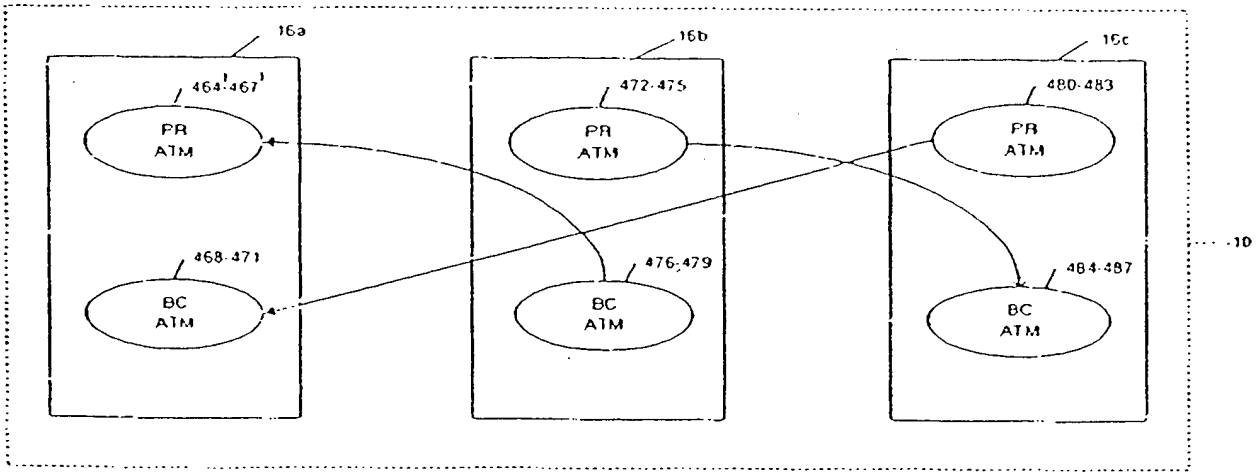


Fig. 31c



0074-80-0082525.0

Fig. 32a

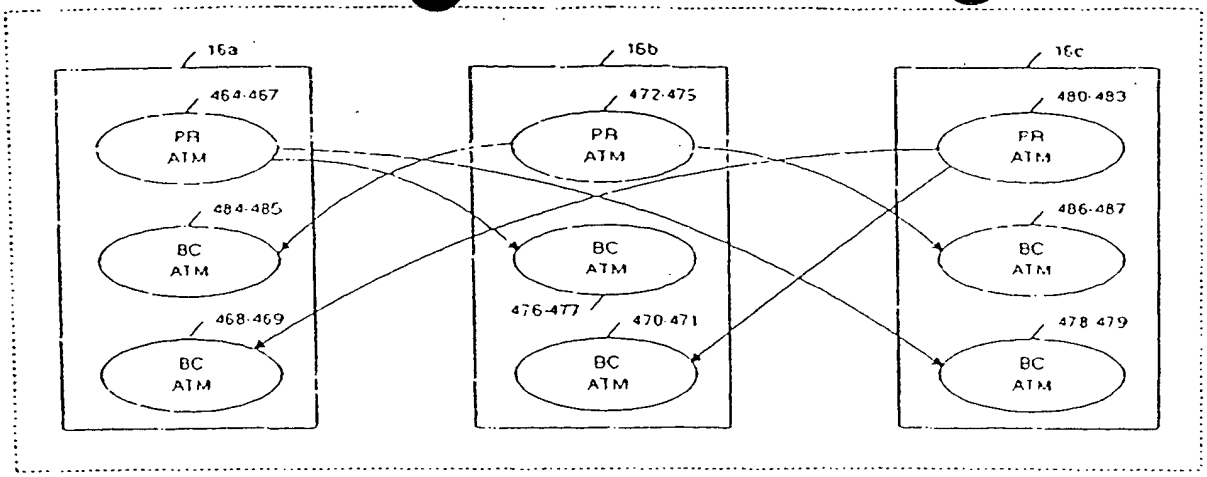


Fig. 32b

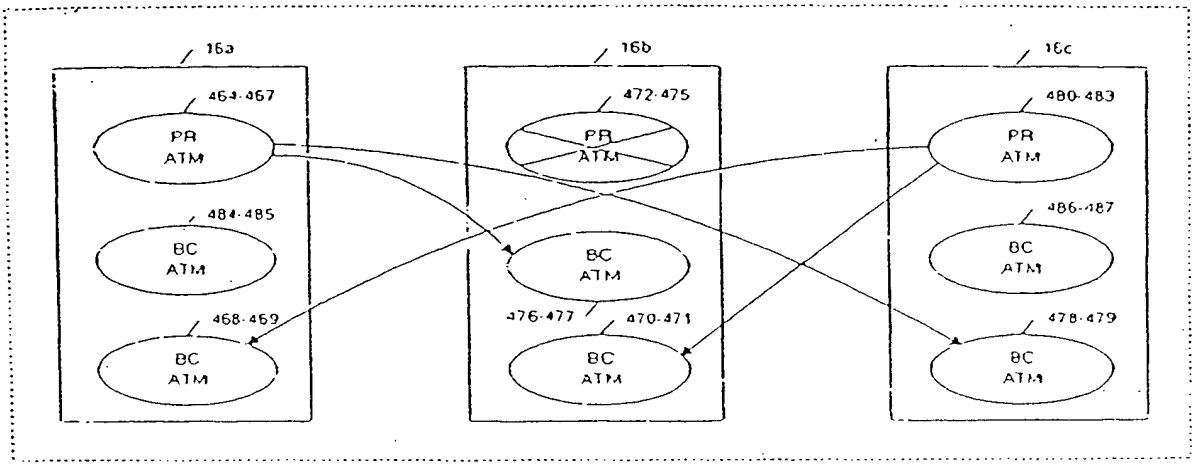
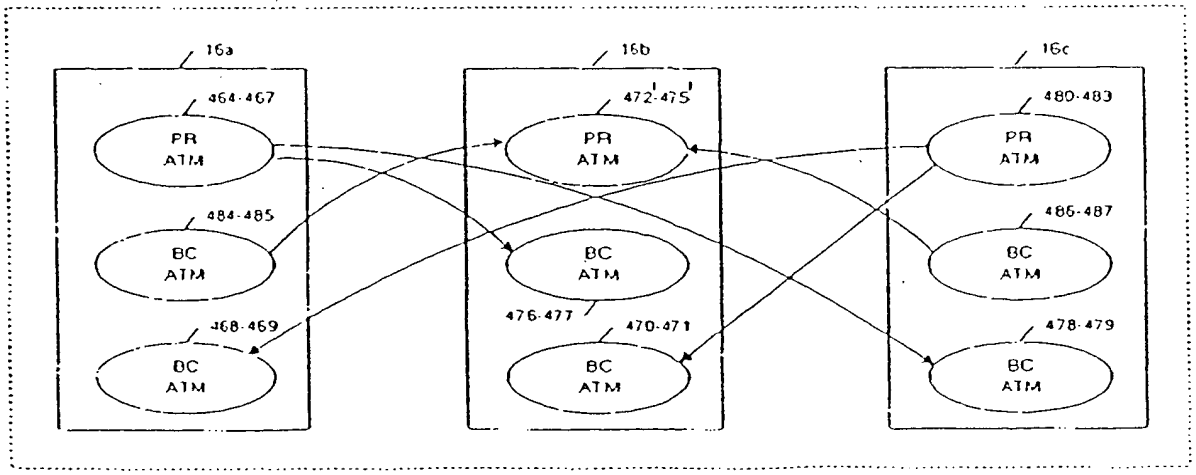


Fig. 32c



Sheet 0 of 0 Sheets 0 0 0 0 0 0 0 0 0 0

FIG. 33a

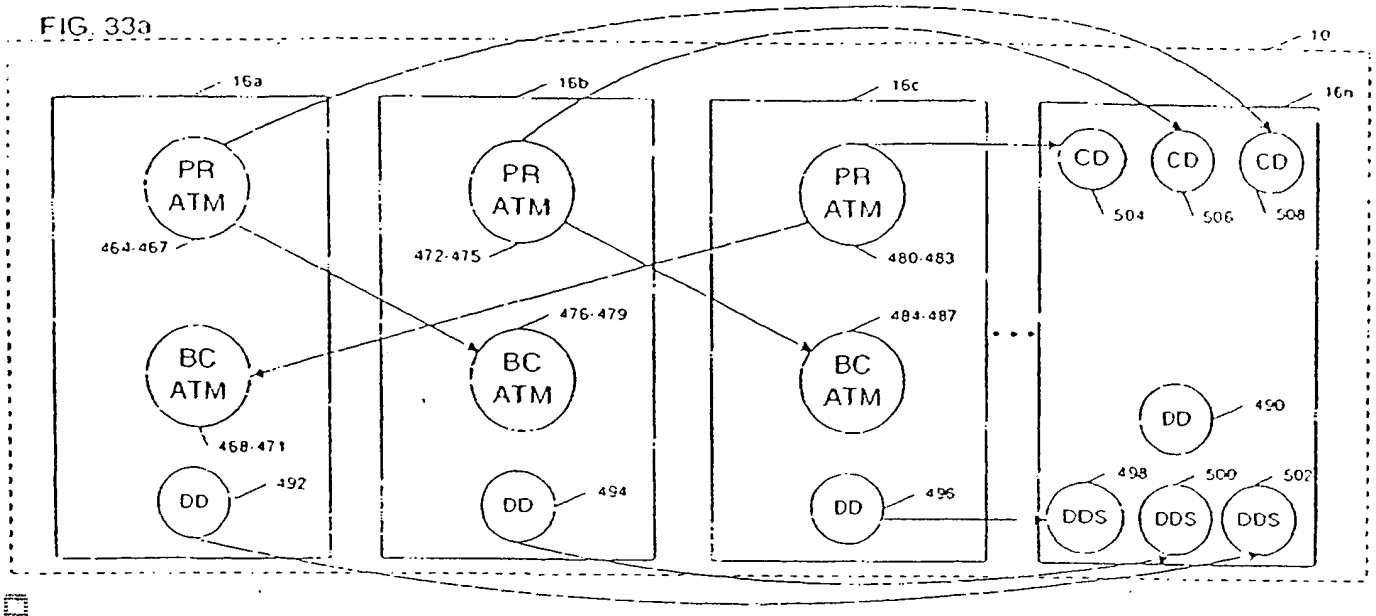


FIG. 33b

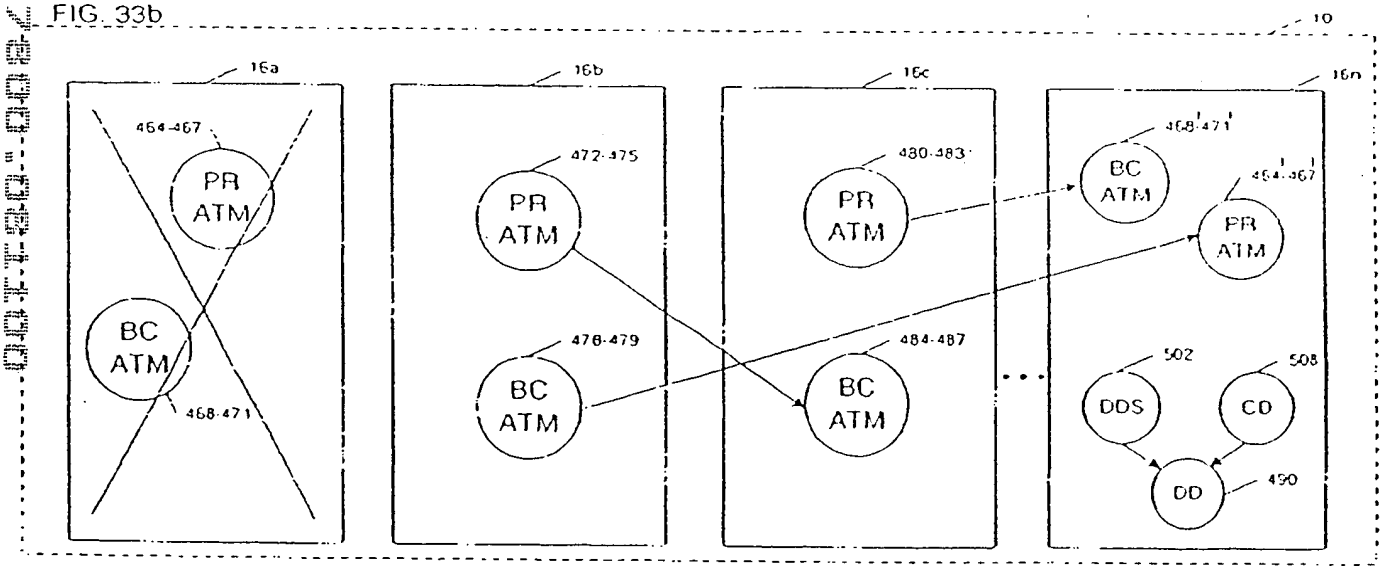


FIG. 33c

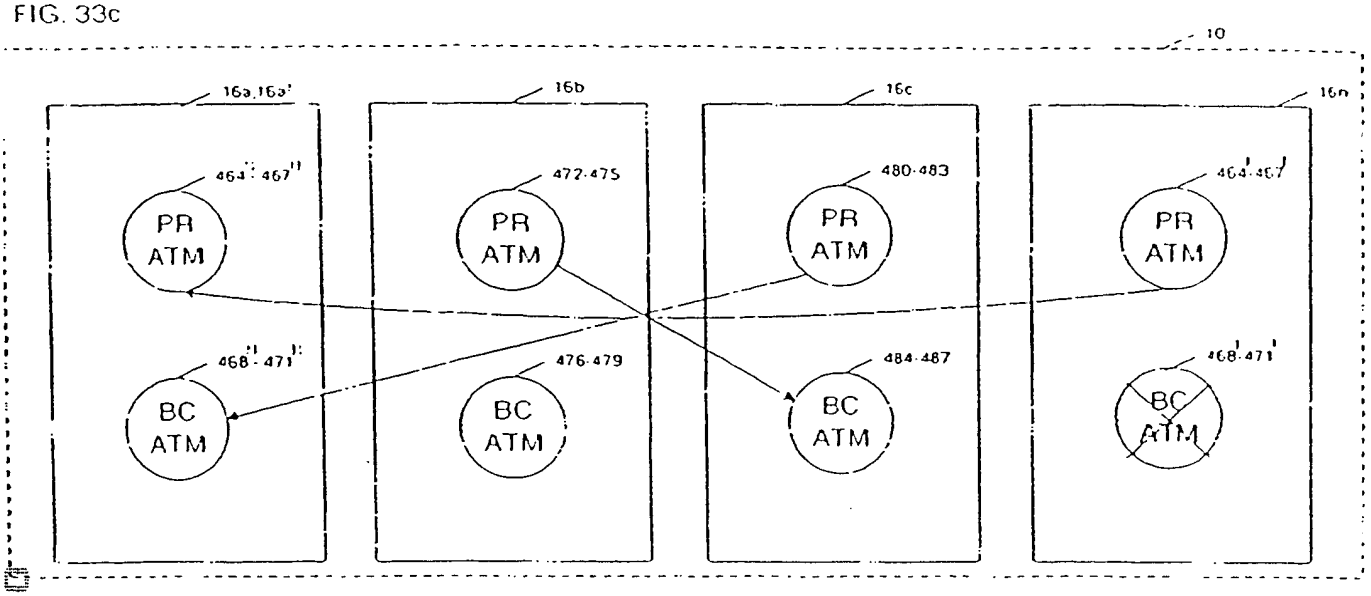


FIG. 33d

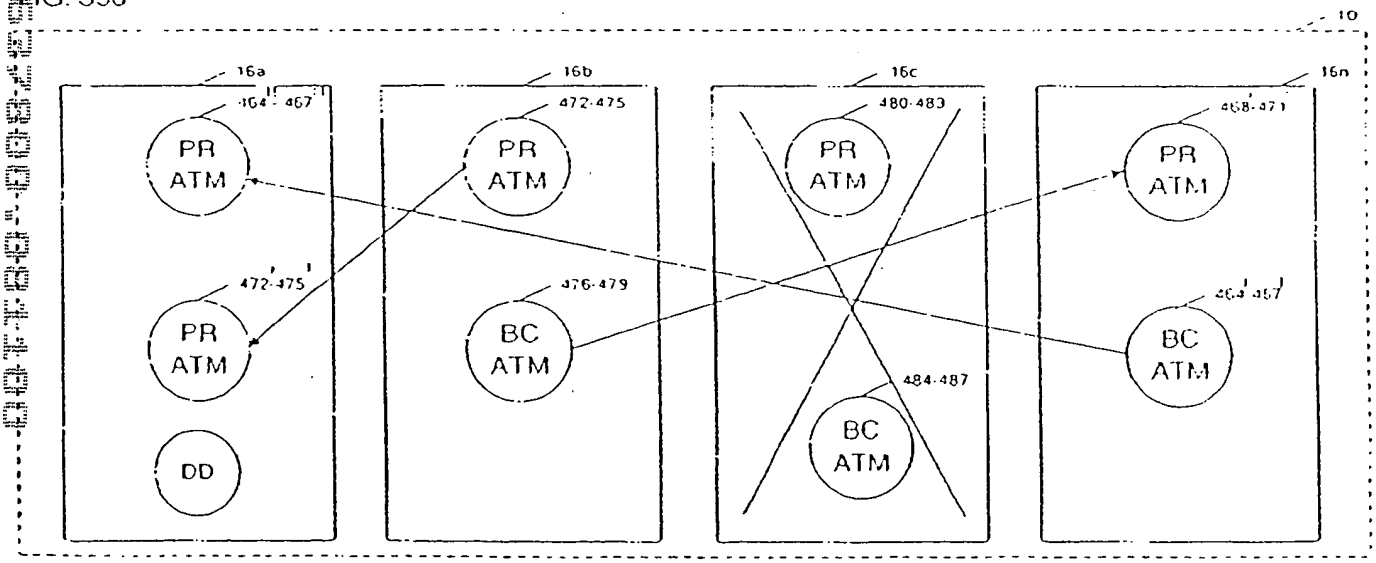
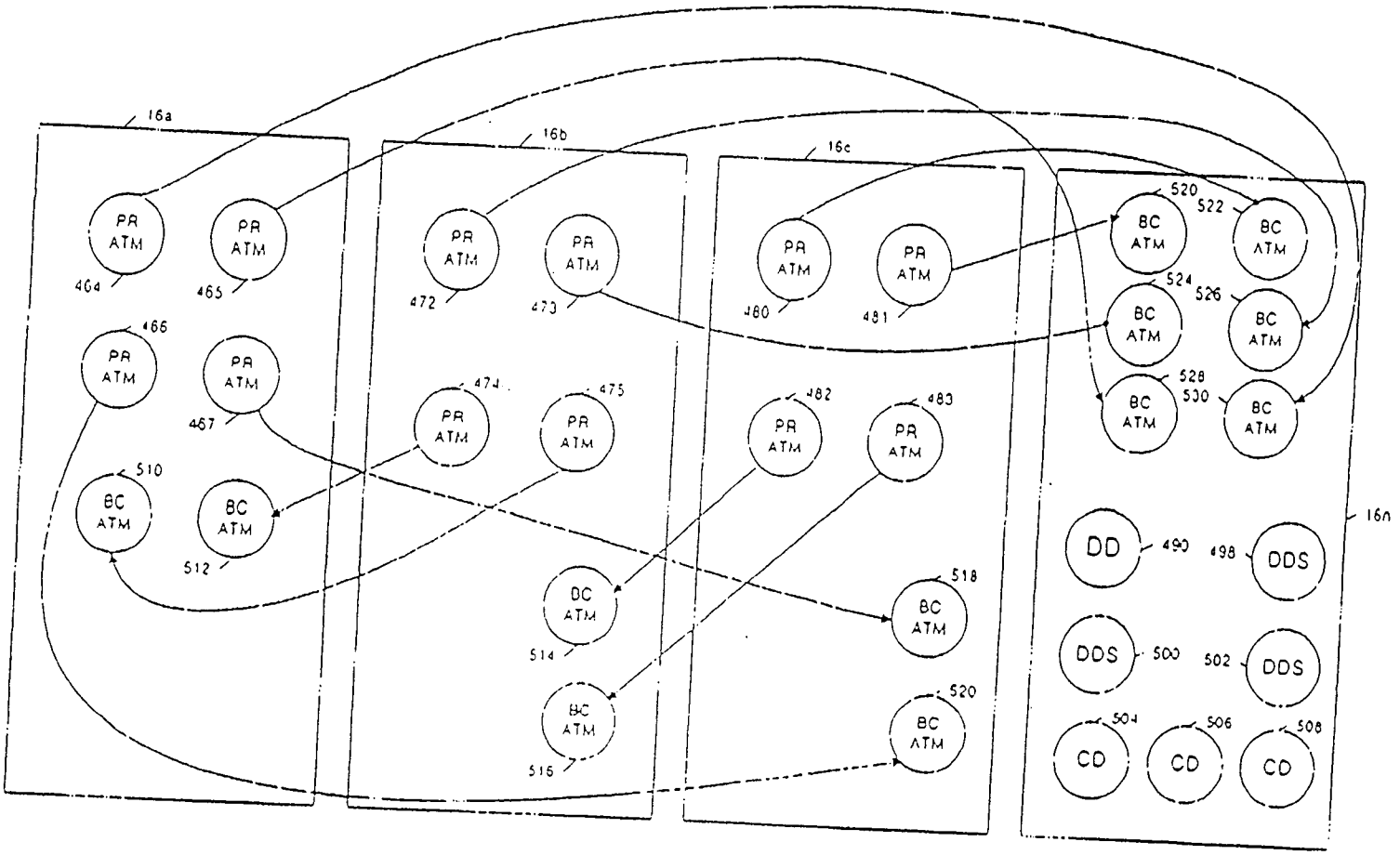
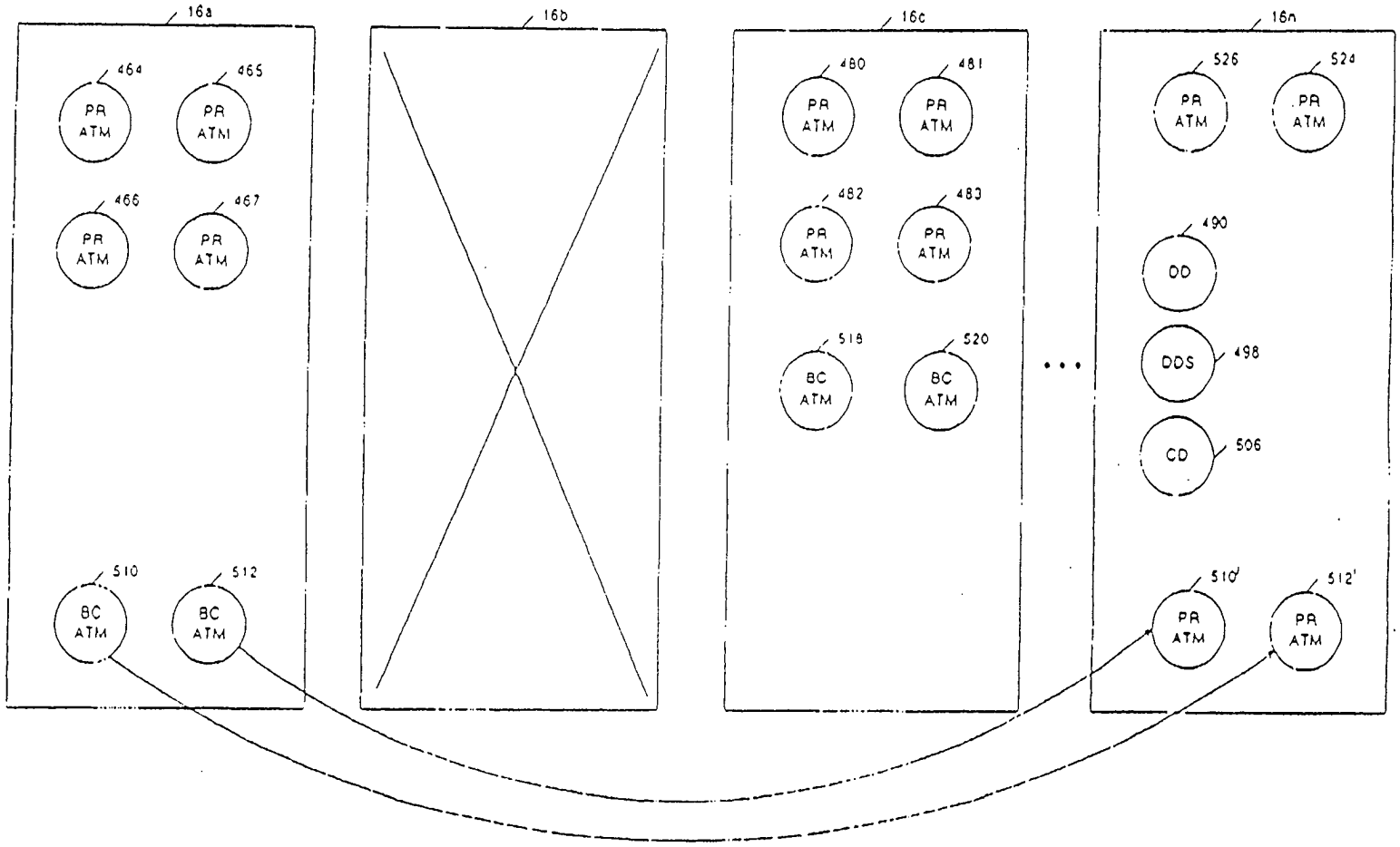


Fig. 34a


16a
16b
16c
16n
PR ATM
464
465
466
467
472
473
474
475
480
481
482
483
BC ATM
510
512
514
516
518
520
522
524
526
528
530
DD
490
498
DDS
500
502
CD
504
506
508

0987802 "0082960

FIG. 34b



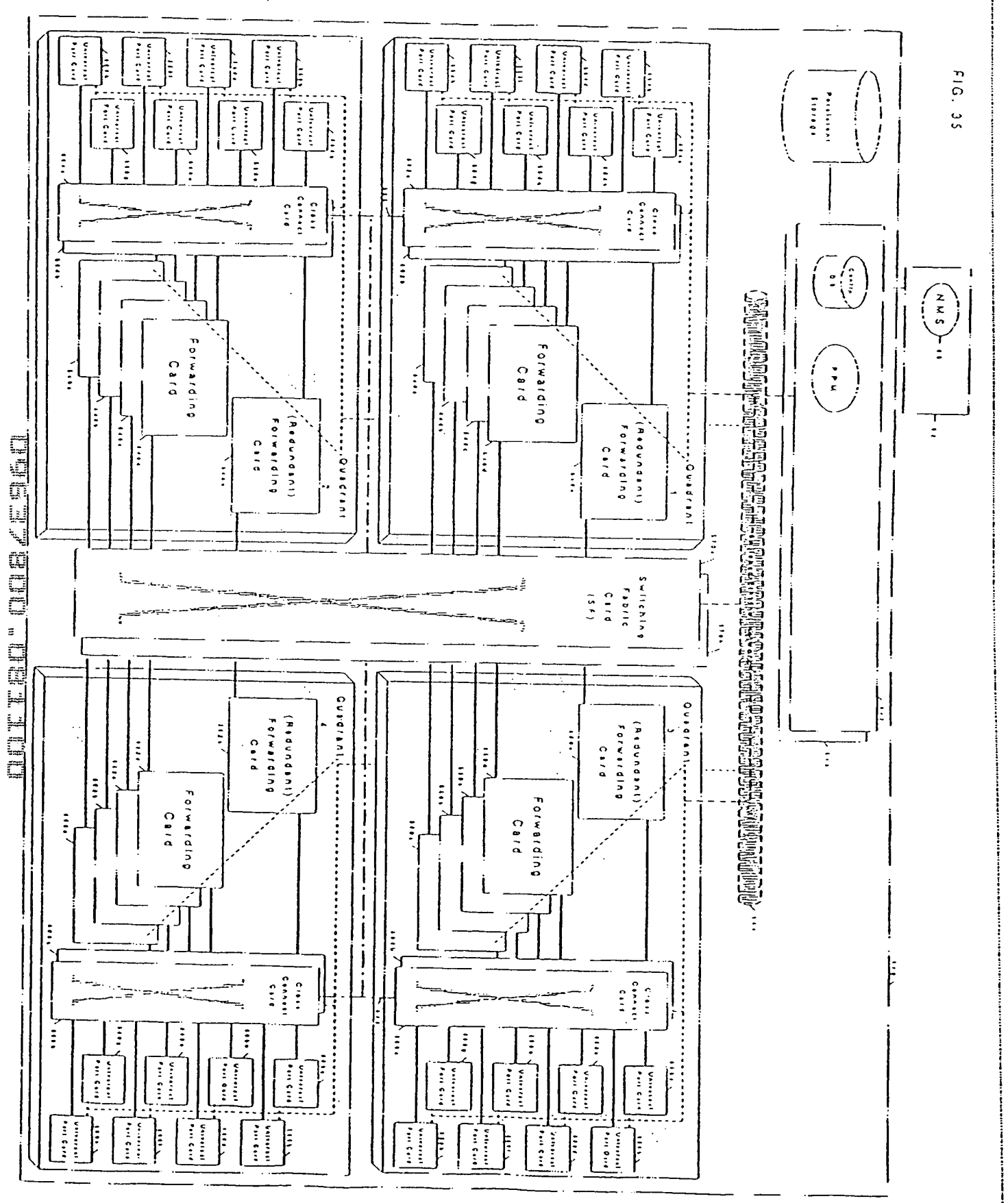

NMS
Forwarding Card
(Redundant) Forwarding Card
Switching Fabric Card (SF)
Quadrant

FIG. 35

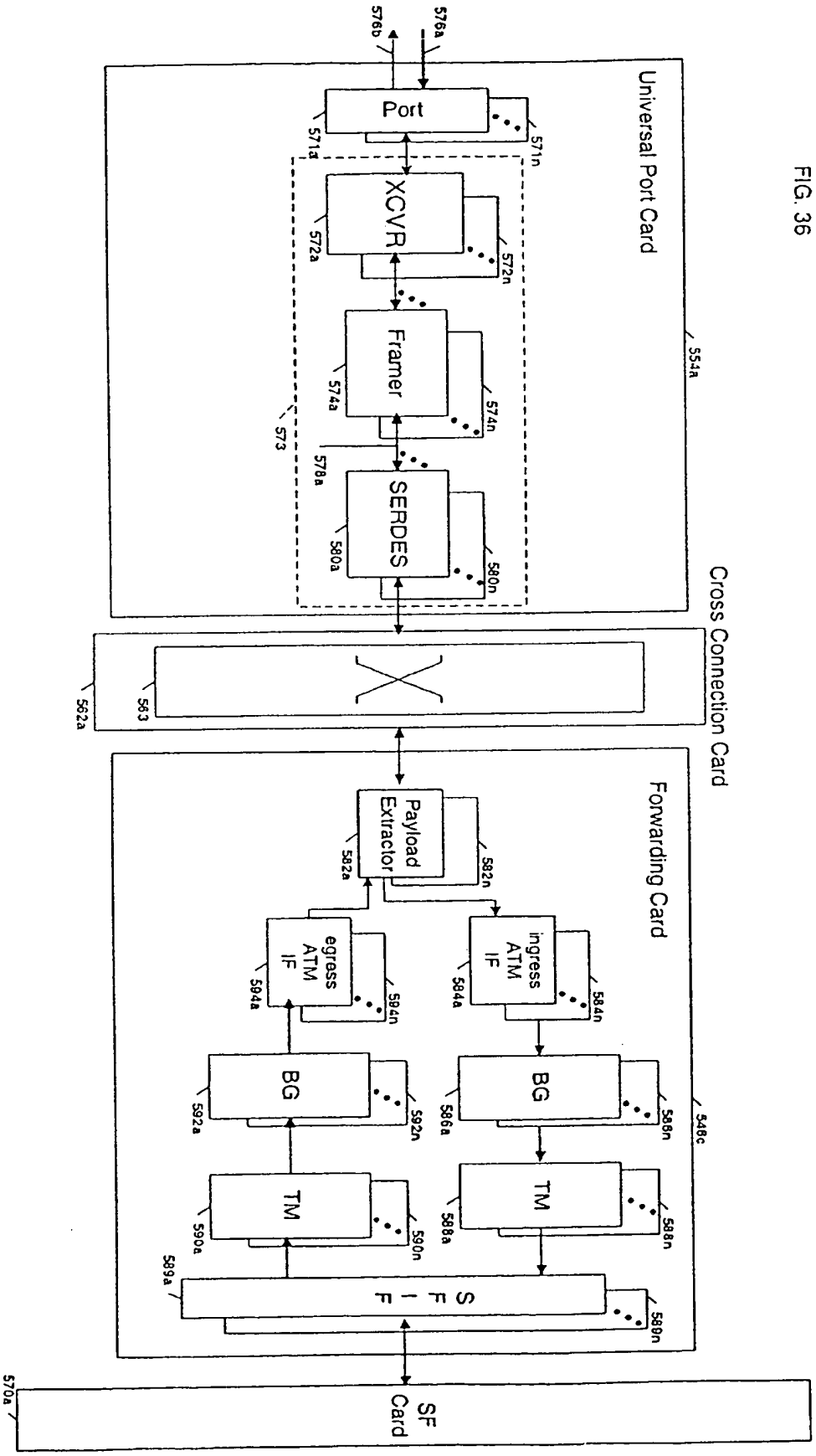


FIG. 36

09375808 "09375808

FIG. 37

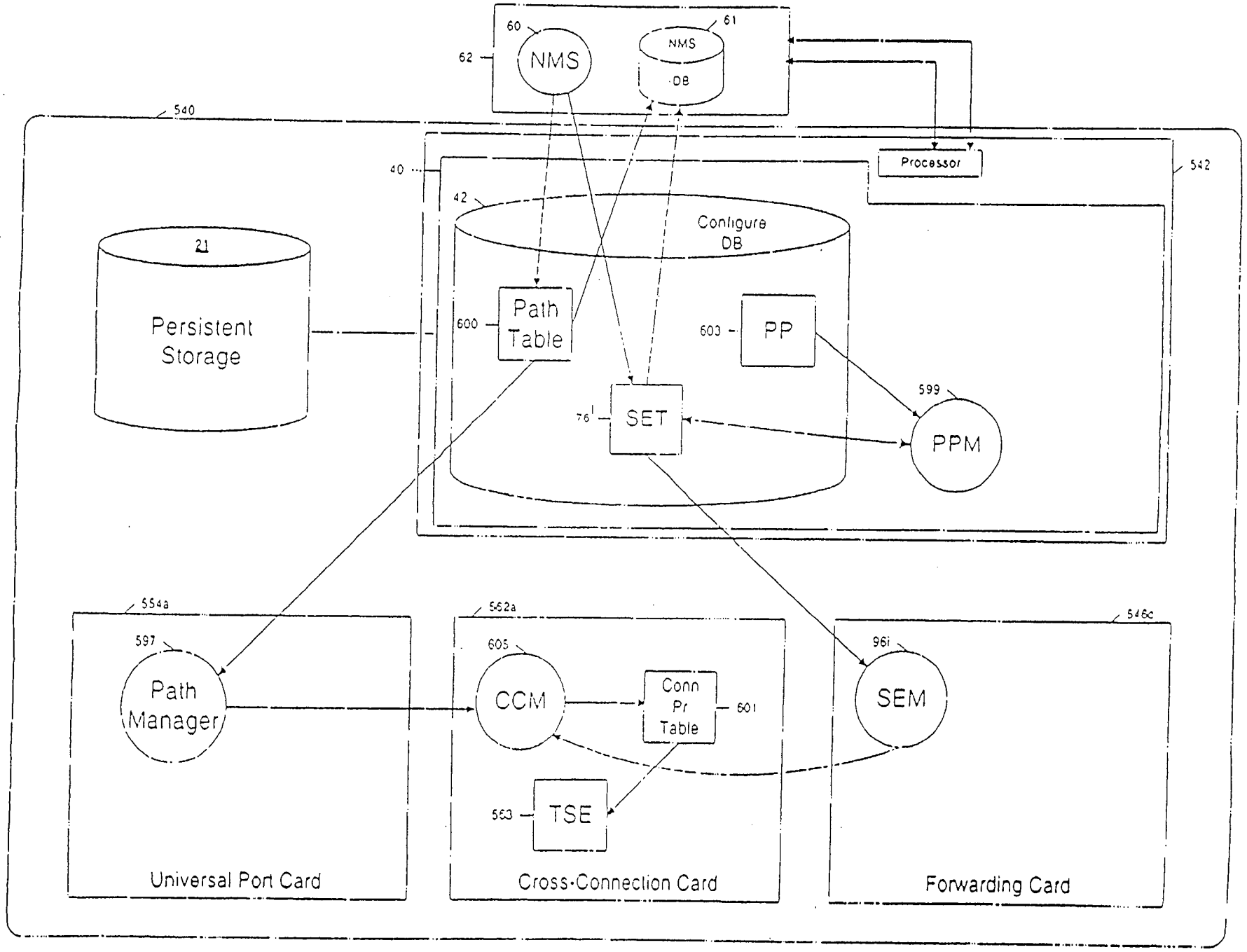
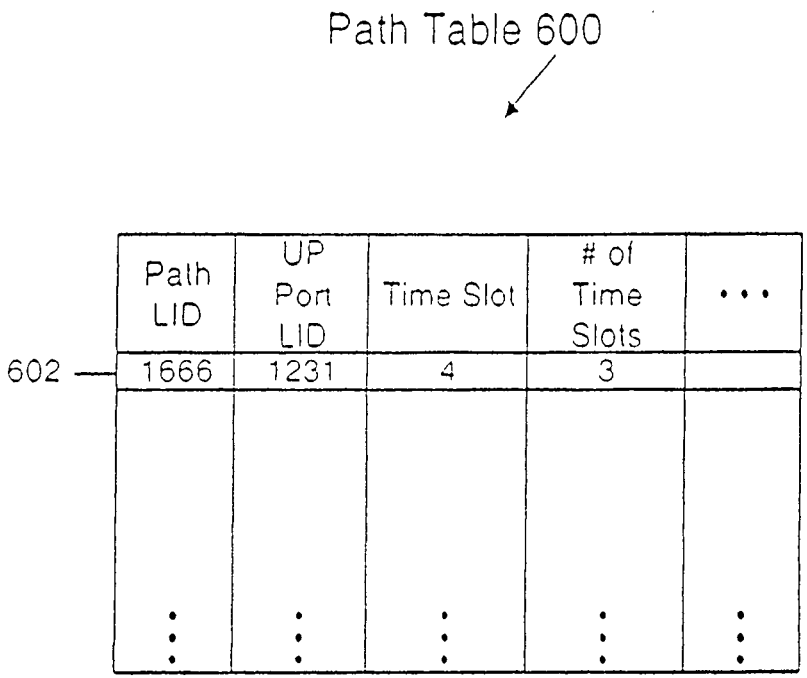
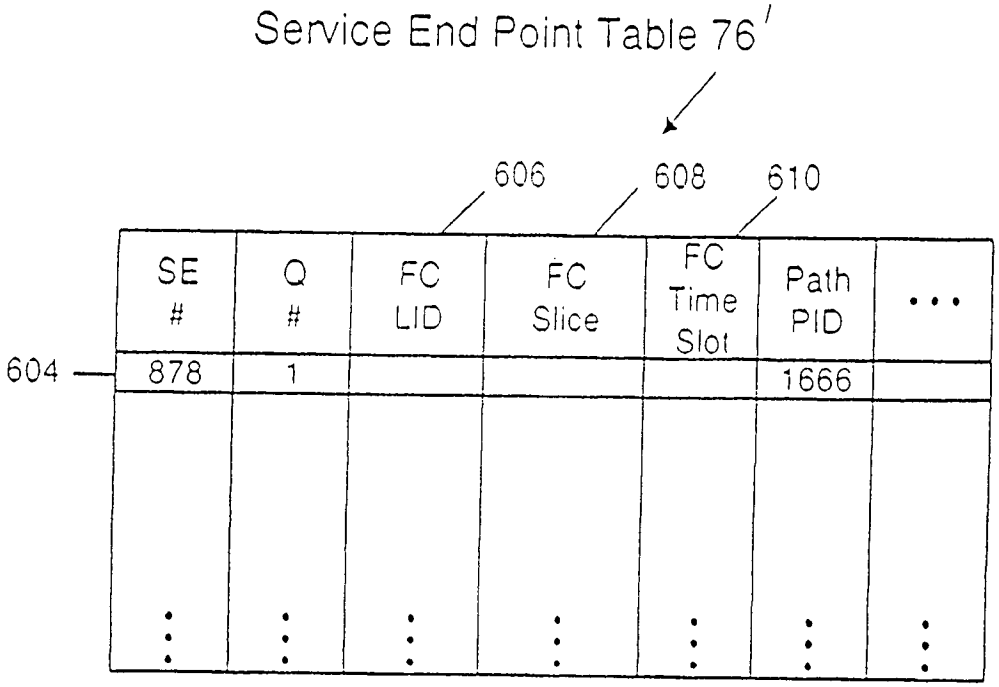

60
NMS
62
61
NMS
DB
540
542
Processor
40
42
Configure DB
21
Persistent Storage
600
Path Table
603
PP
599
76'
SET
PPM
554a
597
Path Manager
562a
605
CCM
Conn Pr Table
601
553
TSE
546c
96i
SEM
Universal Port Card
Cross-Connection Card
Forwarding Card

FIG. 38


Path Table 600
Path LID
UP Port LID
Time Slot
# of Time Slots
• • •
602
1666
1231
4
3

0078'0082E960

FIG. 39



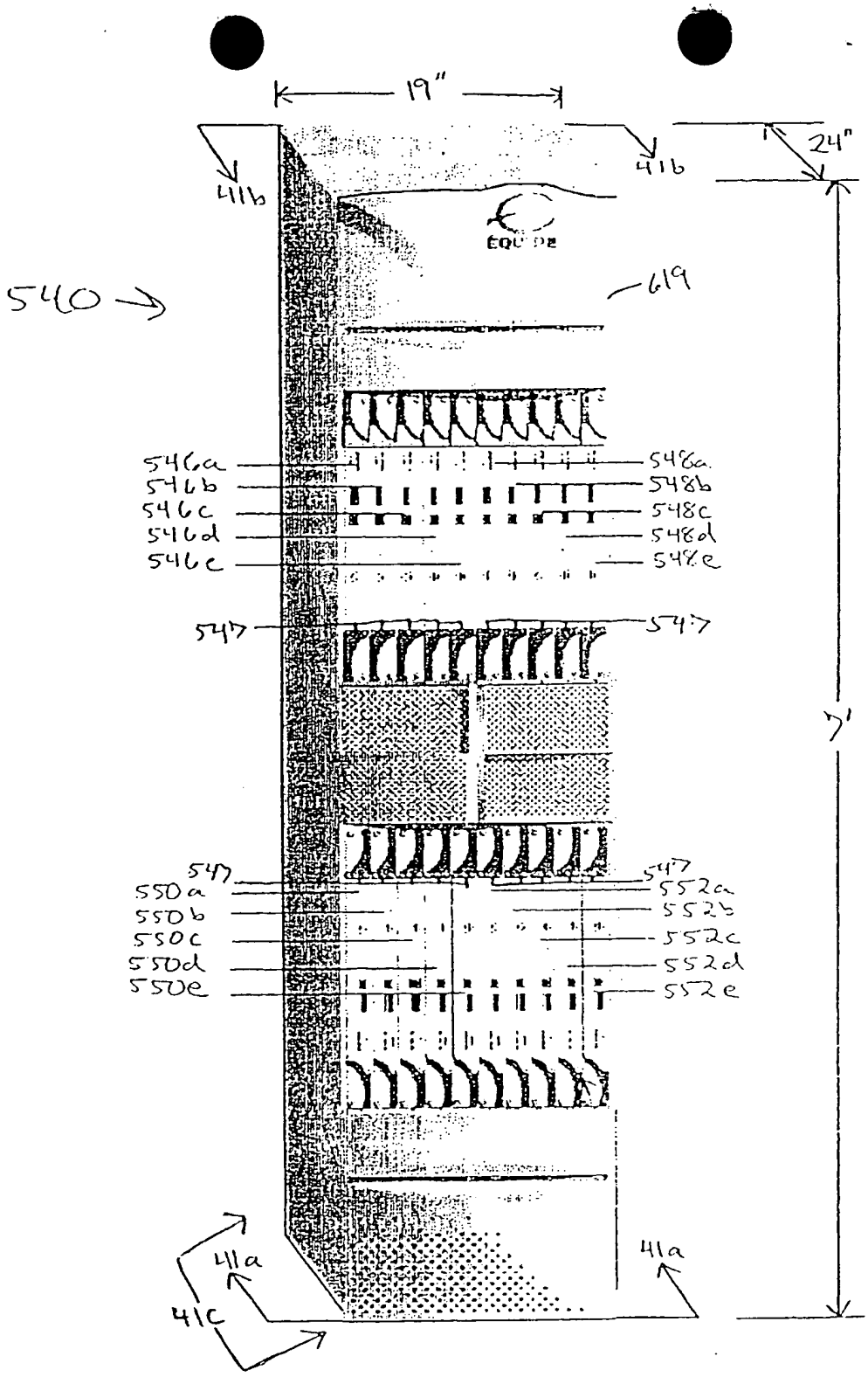


Fig. 40

0056790 - 0056790

FIG. 41a
Front

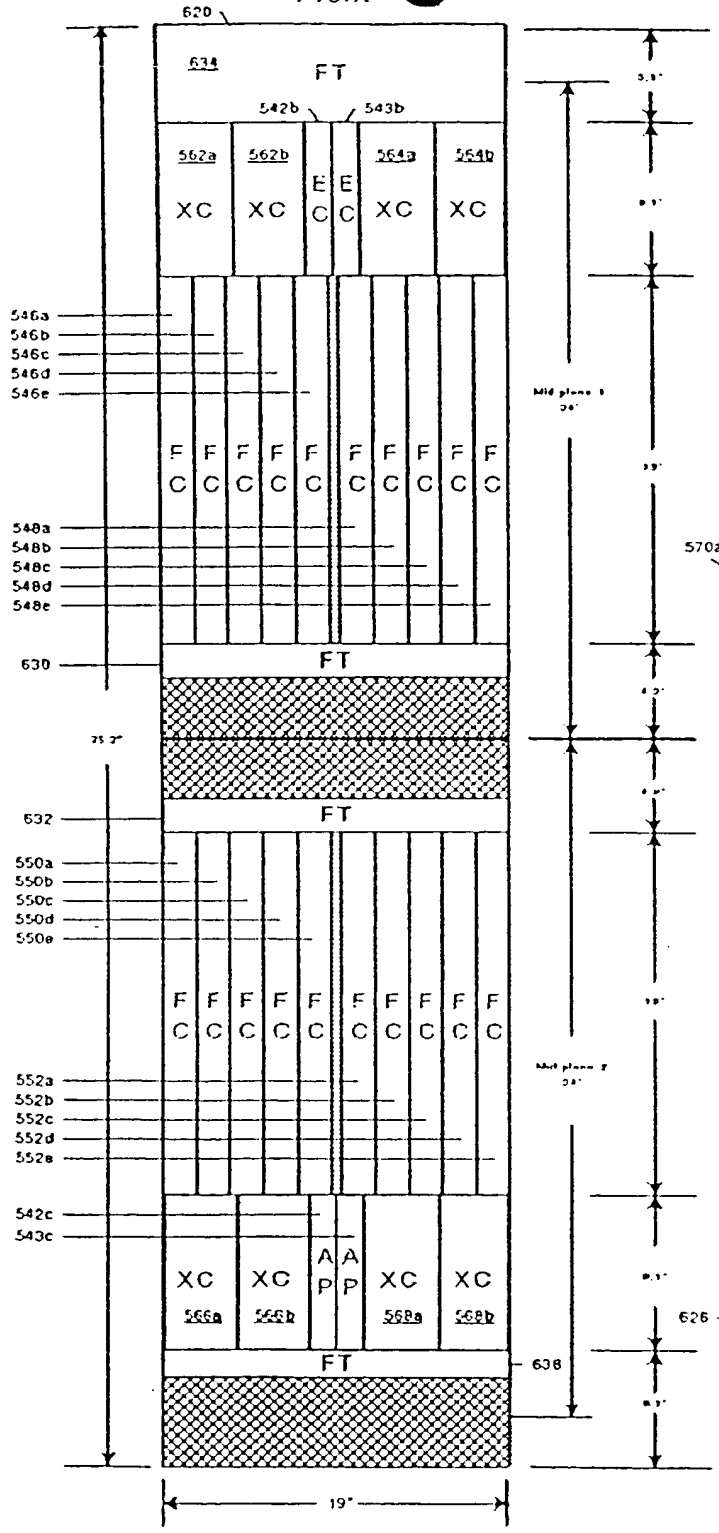
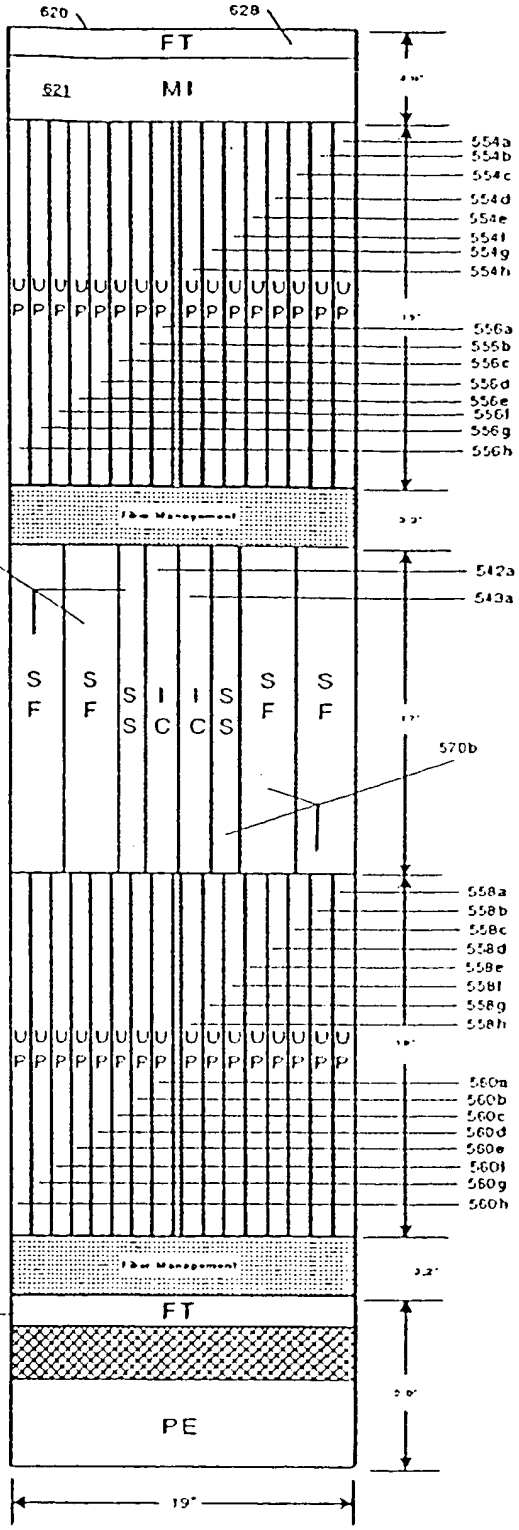


FIG. 41b
Back



Doc Code: AP.PRE.REQ

FIG. 41c

Side

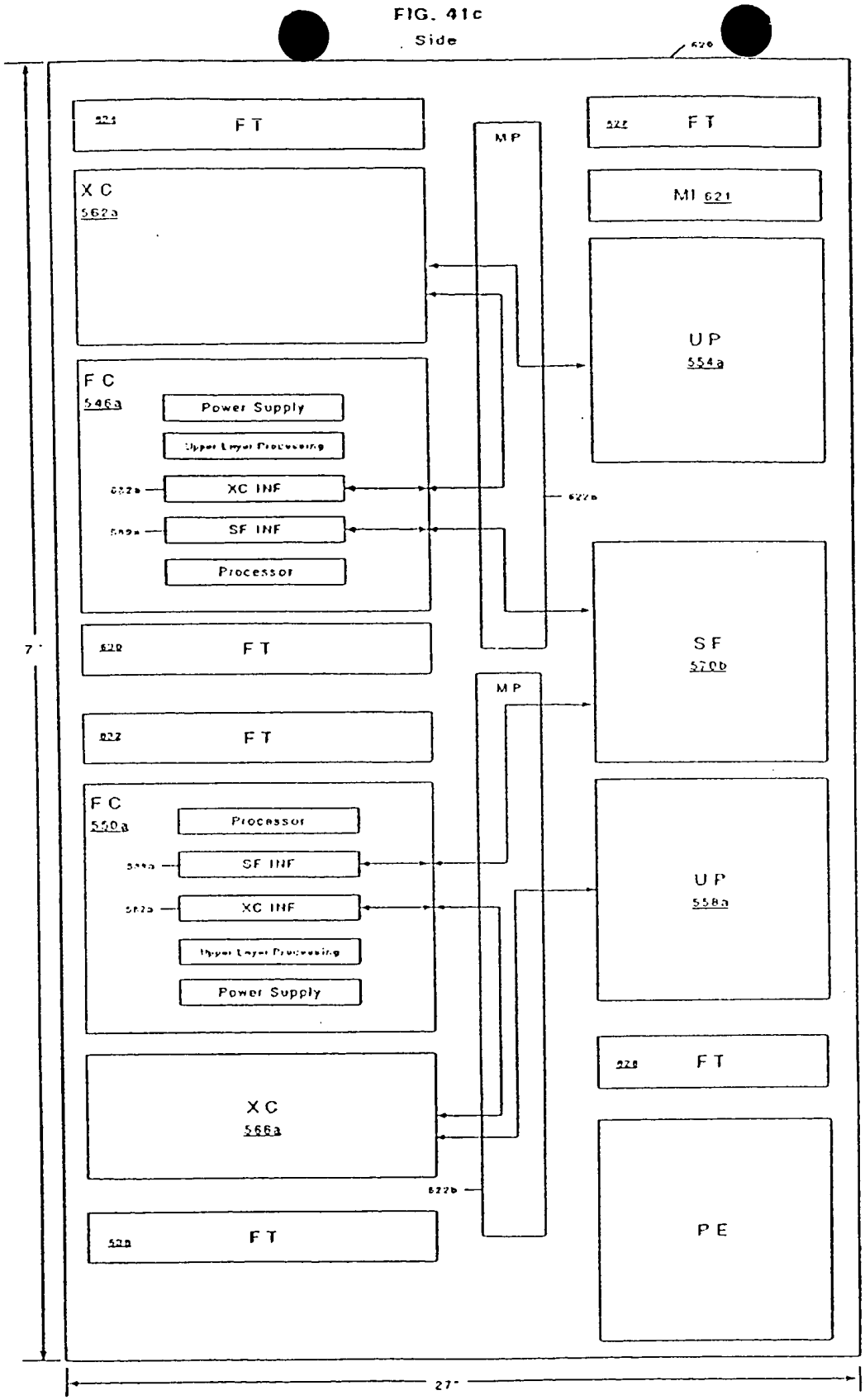
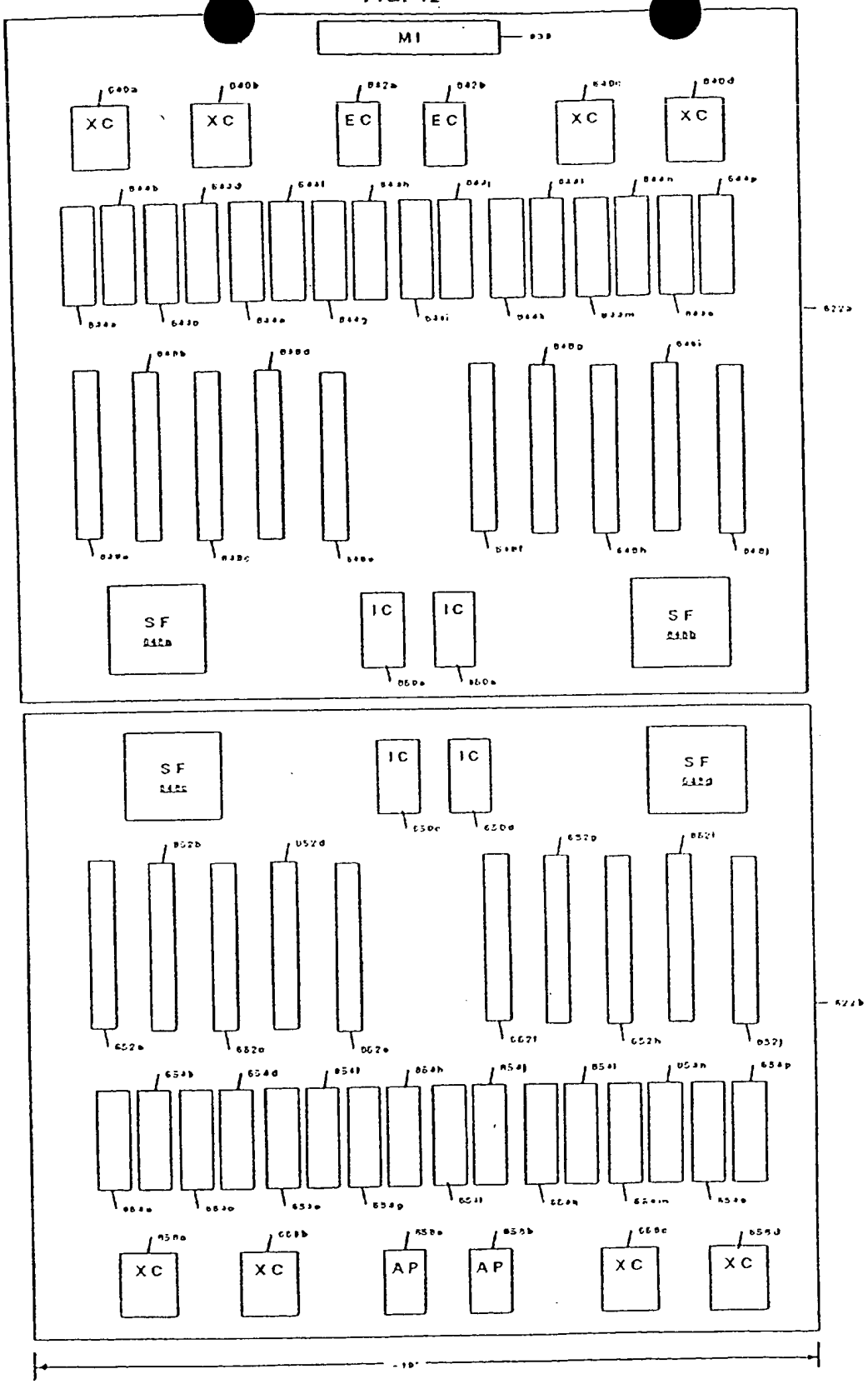
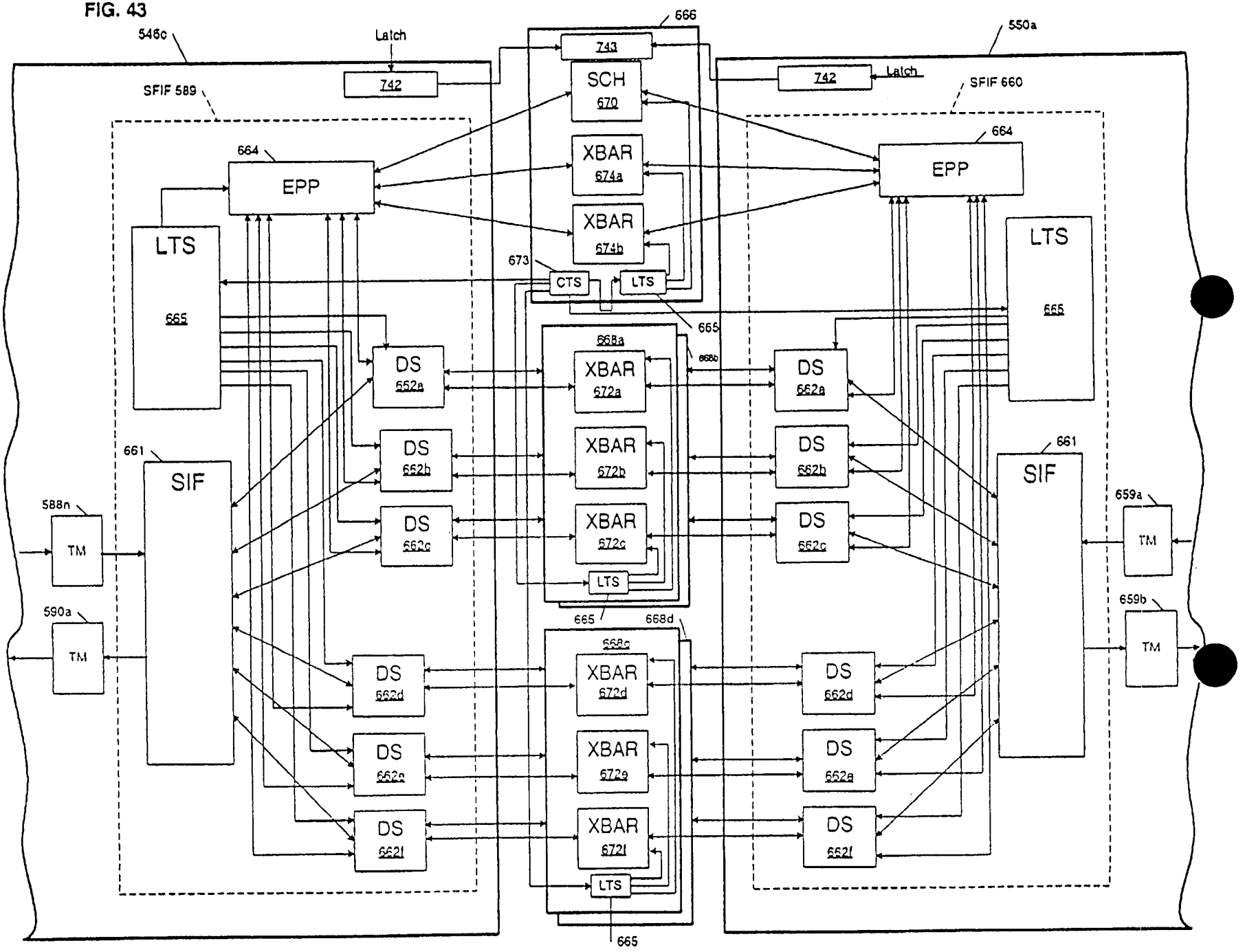

FT
MP
FT
XC
562a
MI 621
UP
554a
FC
546a
Power Supply
XC INF
SF INF
Processor
FT
SF
570b
MP
FT
FC
550a
Processor
SF INF
XC INF
Power Supply
UP
558a
FT
XC
566a
PE
FT
7'
27'

FIG. 42



00T80"0082E960

FIG. 43



Sent By: Equipe Communications; 781 795 2031; Jul-6-00 4:25PM; Page 3

Sent By: Equipe Communications; 781 795 2031; Jul-6-00 4:26PM; Page 4

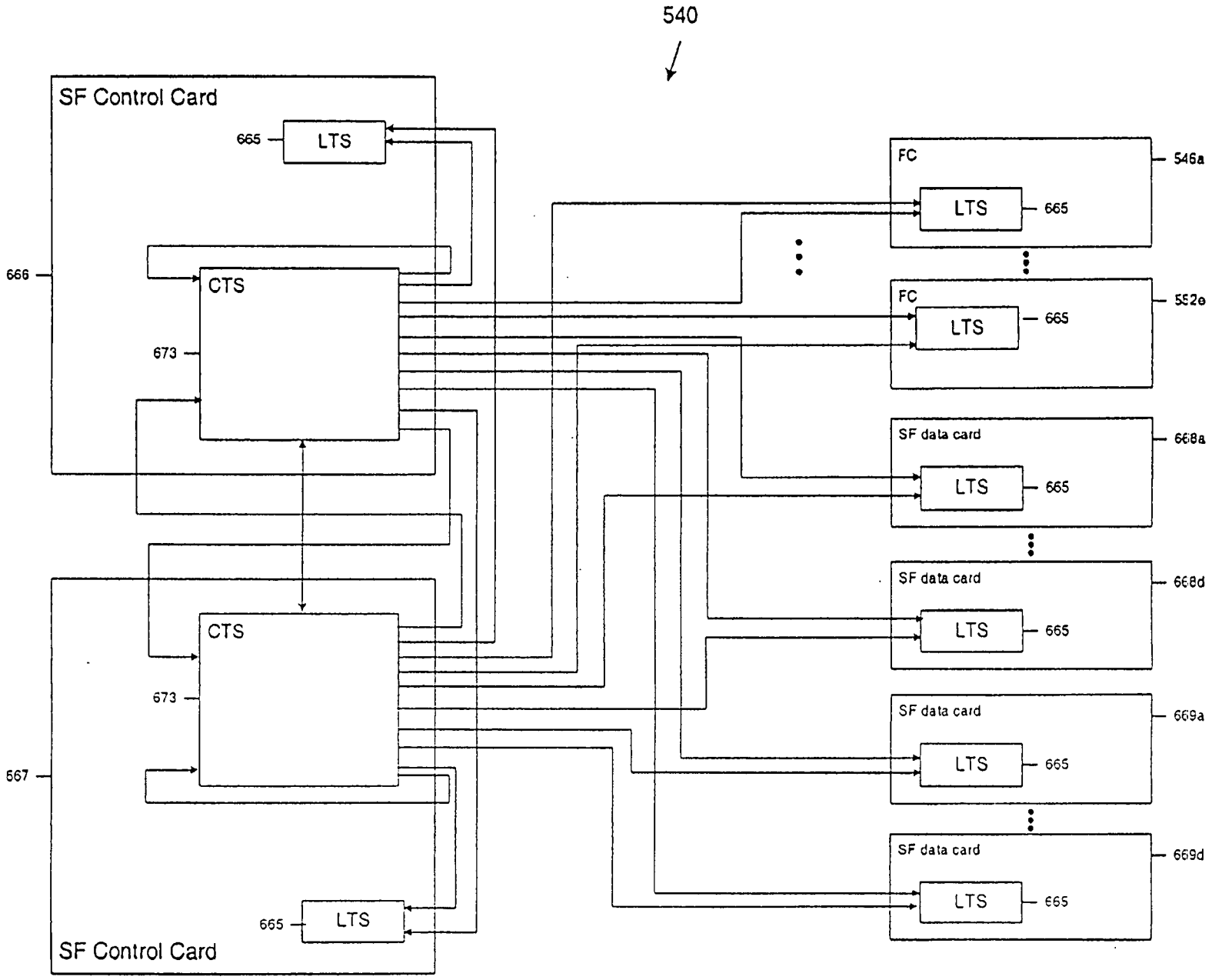
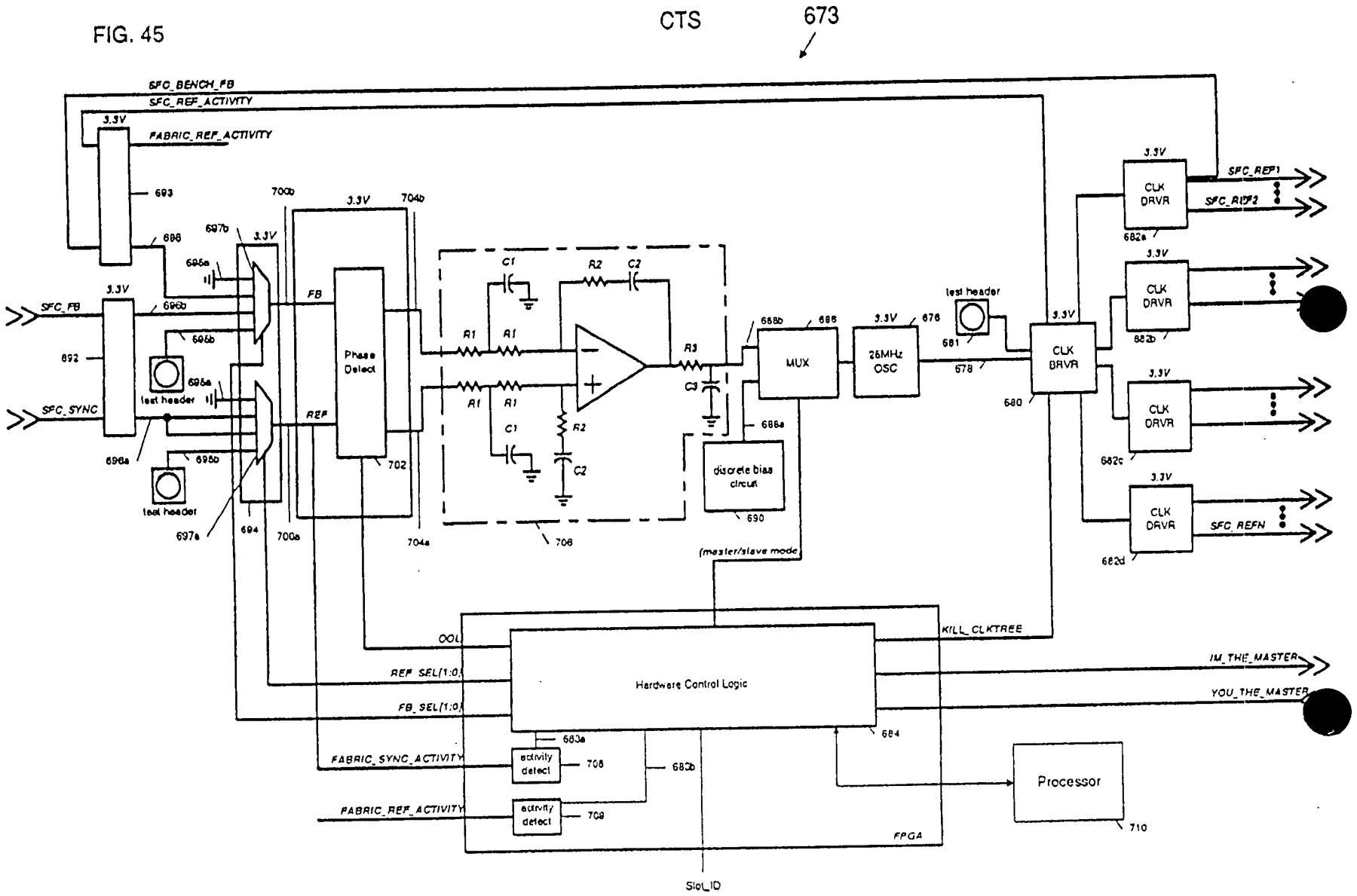


FIG. 44

FIG. 45



Sent By: Equipe Communications; 781 795 2031; Jul-6-00 4:26PM; Page 5

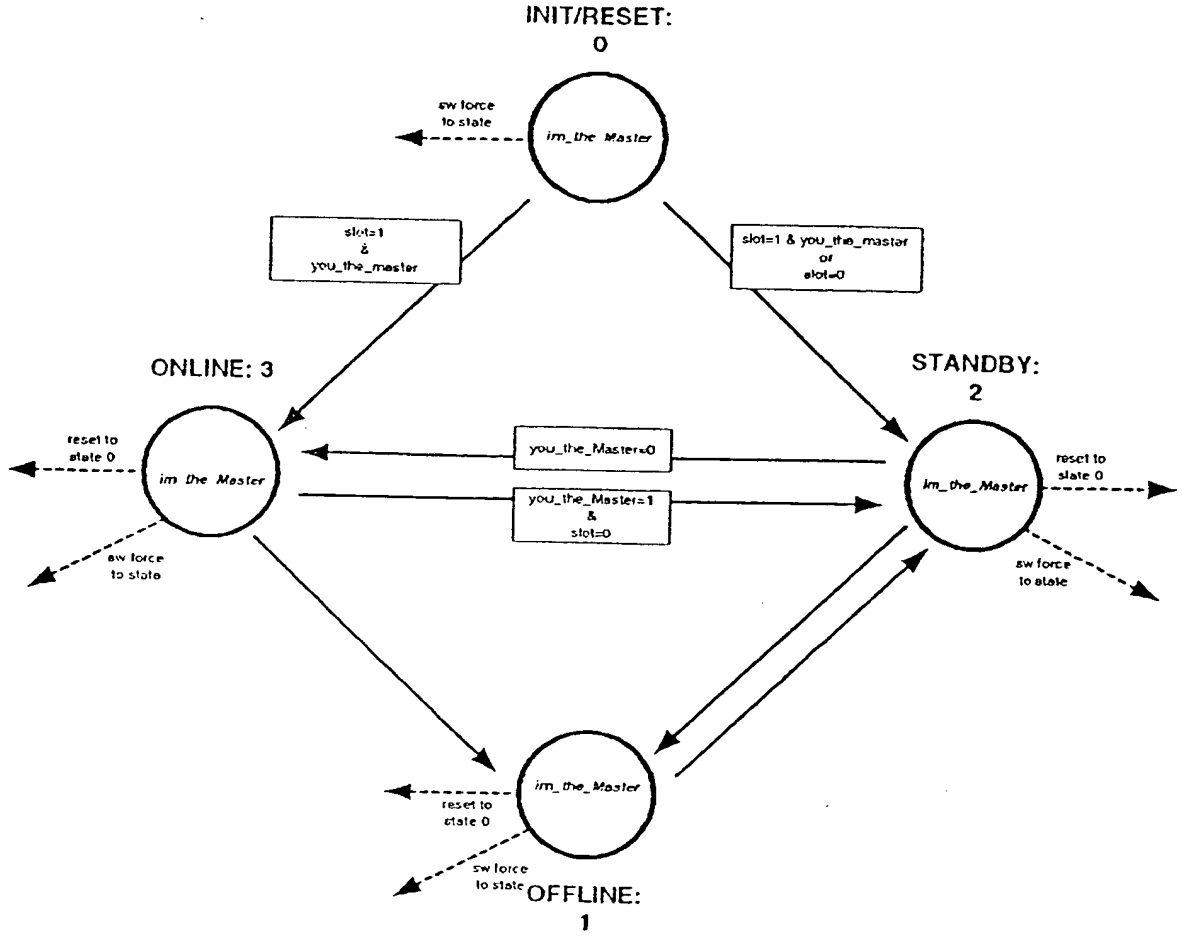

INIT/RESET:
0
sw force
to state
im_the_Master
slot=1
&
you_the_master
slot=1 & you_the_master
or
slot=0
ONLINE: 3
STANDBY:
2
reset to
state 0
im_the_Master
you_the_Master=0
you_the_Master=1
&
slot=0
im_the_Master
reset to
state 0
sw force
to state
sw force
to state
im_the_Master
reset to
state 0
sw force
to state
OFFLINE:
1

FIG. 46

Sent By: Equipe Communications; 781 795 2031; Jul-6-00 4:26PM; Page 7

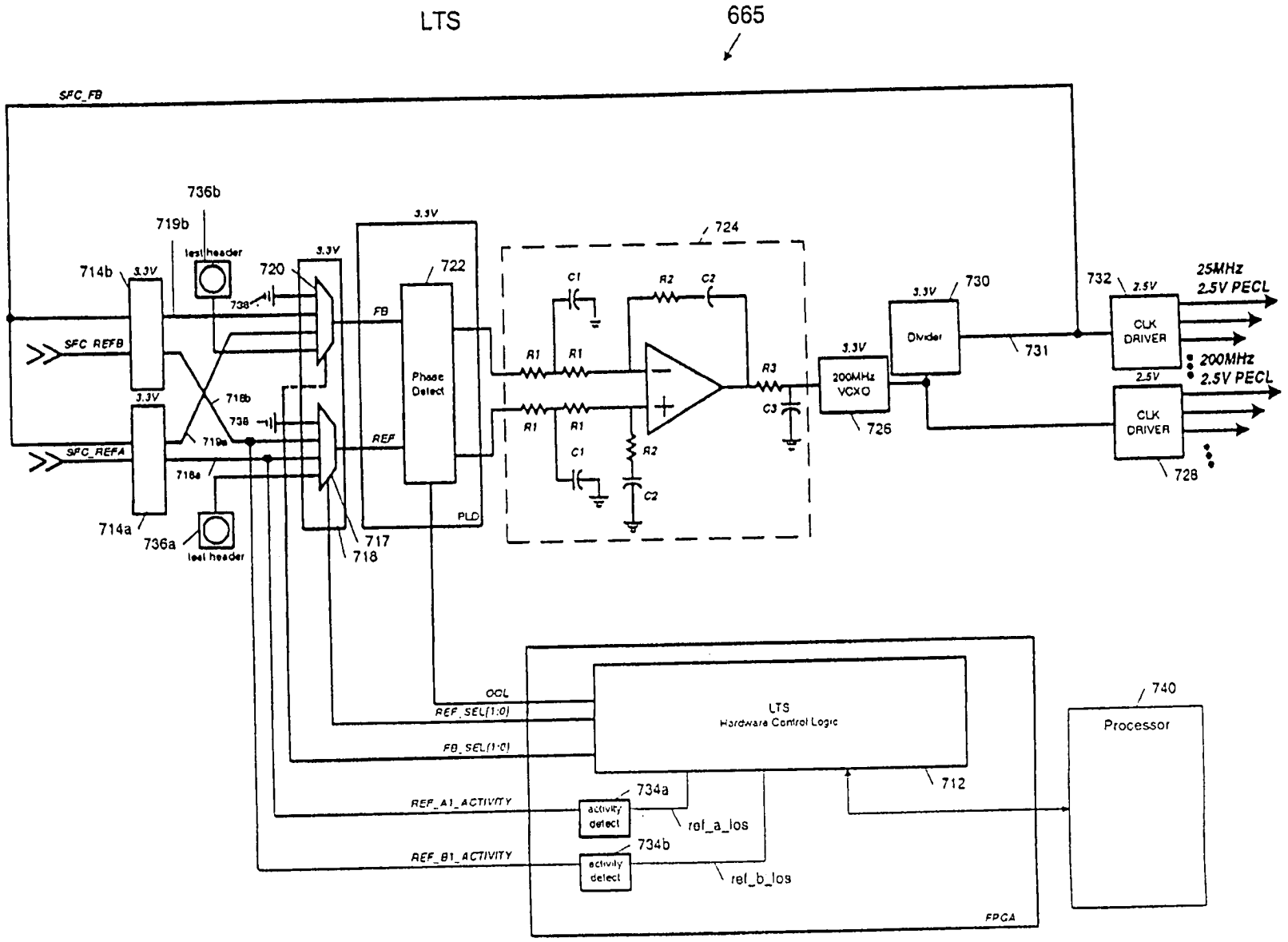


FIG. 47

Docket No. 0608.2050-000

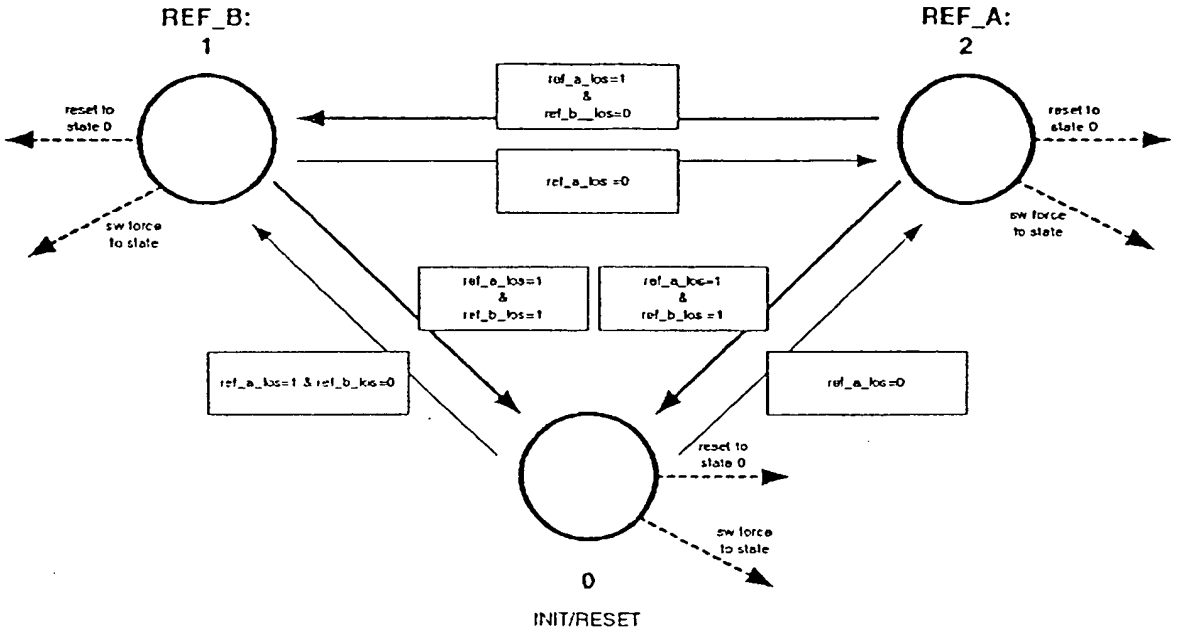


FIG. 48

Page 9
Jul-6-00 4:27PM;
781 795 2031;
Sent By: Equipe Communications;

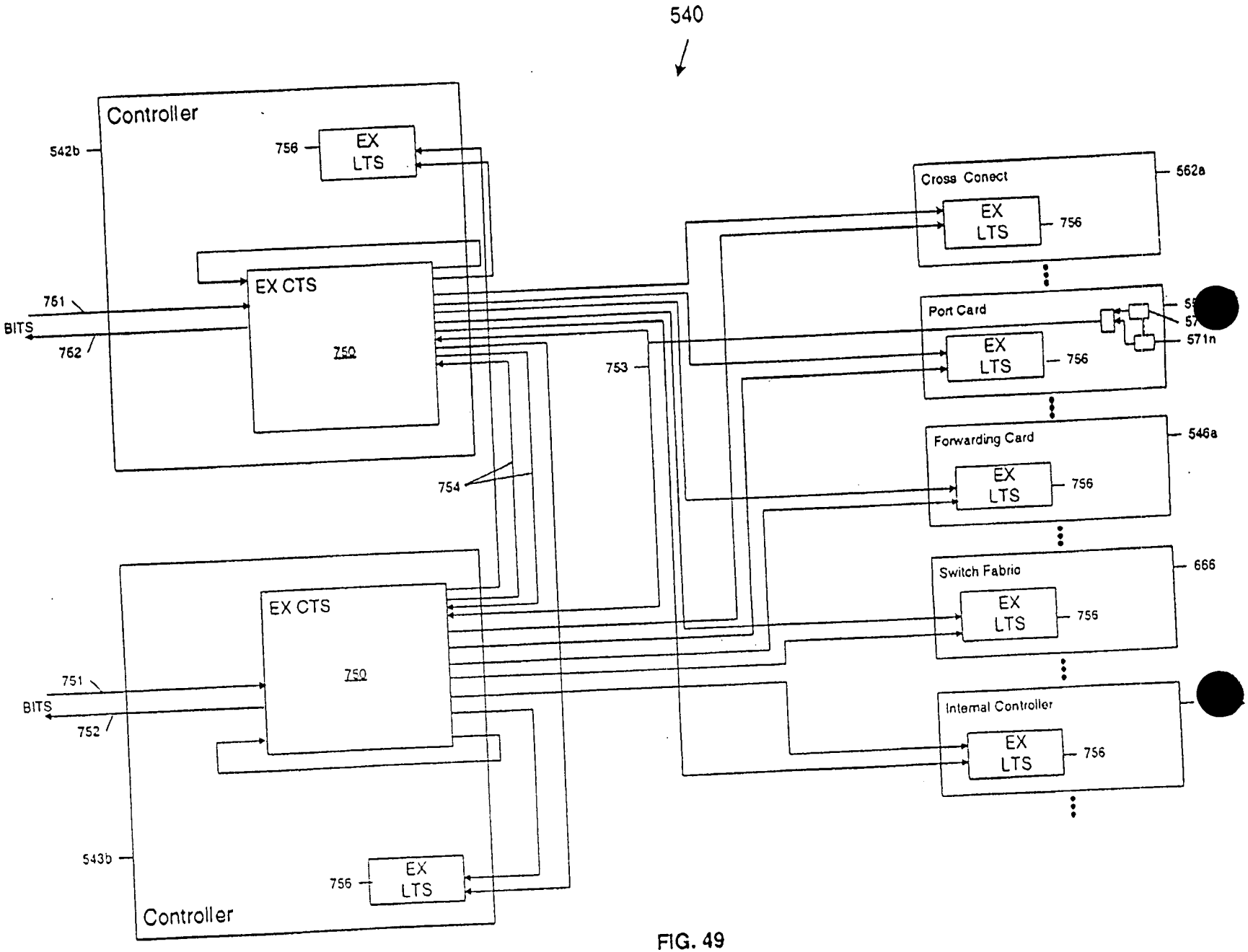


FIG. 49

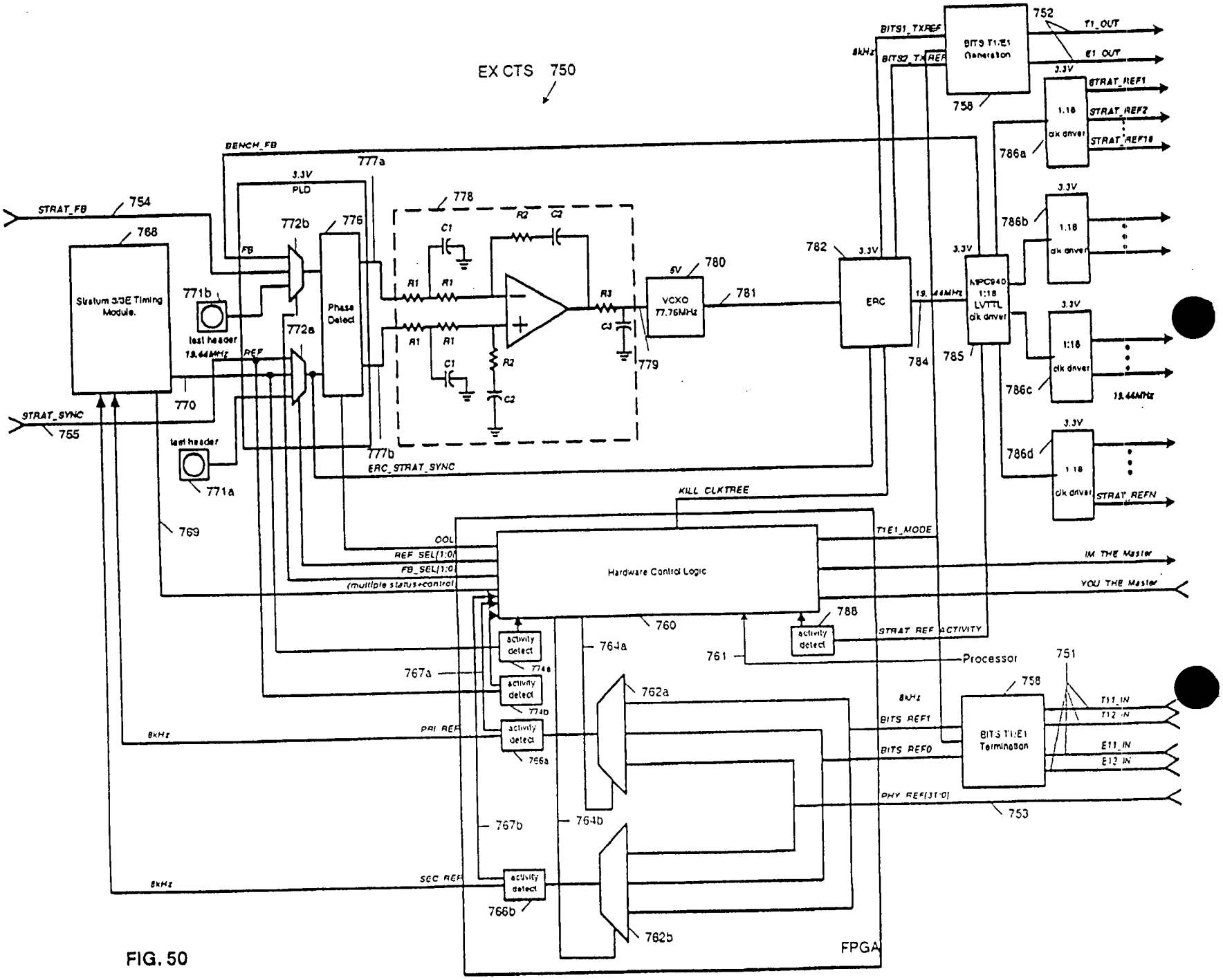

EX CTS 750
BENCH_FB
777a
3.3V
PLD
STRAT_FB
754
768
772b
776
FB
System 3/3E Timing Module.
771b
test header
19.44MHz
REF
772a
Phase Detect
778
C1
R2
C2
R1
R3
C3
VCXO 77.76MHz
5V
780
781
779
770
STRAT_SYNC
755
test header
771a
777b
ERC_STRAT_SYNC
769
782
3.3V
ERC
784
785
MPC940 1:18 LVTTL clk driver
786a
786b
786c
786d
1:18 clk driver
STRAT_REF1
STRAT_REF2
STRAT_REF16
STRAT_REFN
19.44MHz
KILL CLKTREE
T1E1_MODE
IM THE Master
YOU THE Master
REF SEL(1:0)
FB_SEL(1:0)
(multiple status+control)
Hardware Control Logic
760
761
788
activity detect
STRAT REF ACTIVITY
Processor
751
758
BITS T1/E1 Generation
752
T1_OUT
E1_OUT
BITS1_TXREF
BITS2_TXREF
8kHz
764a
767a
774a
774b
776a
762a
BITS REF1
BITS REF0
BITS T1/E1 Termination
T11_IN
T12_IN
E11_IN
E12_IN
PHY REF(3:0)
753
PRI REF
SEC REF
767b
764b
766b
762b
FPGA

FIG. 50

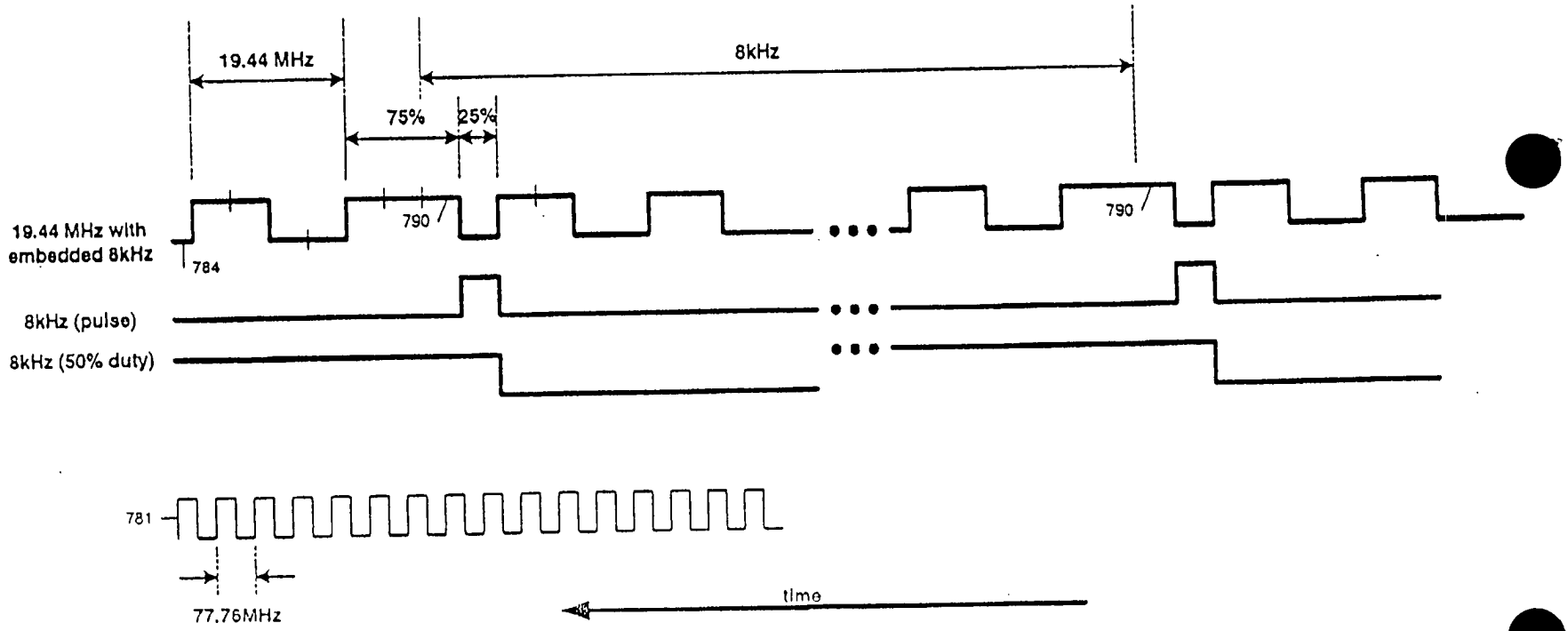

19.44 MHz
8kHz
75%
25%
19.44 MHz with
embedded 8kHz
784
790
790
8kHz (pulse)
8kHz (50% duty)
781
77.76MHz
time

FIG. 51

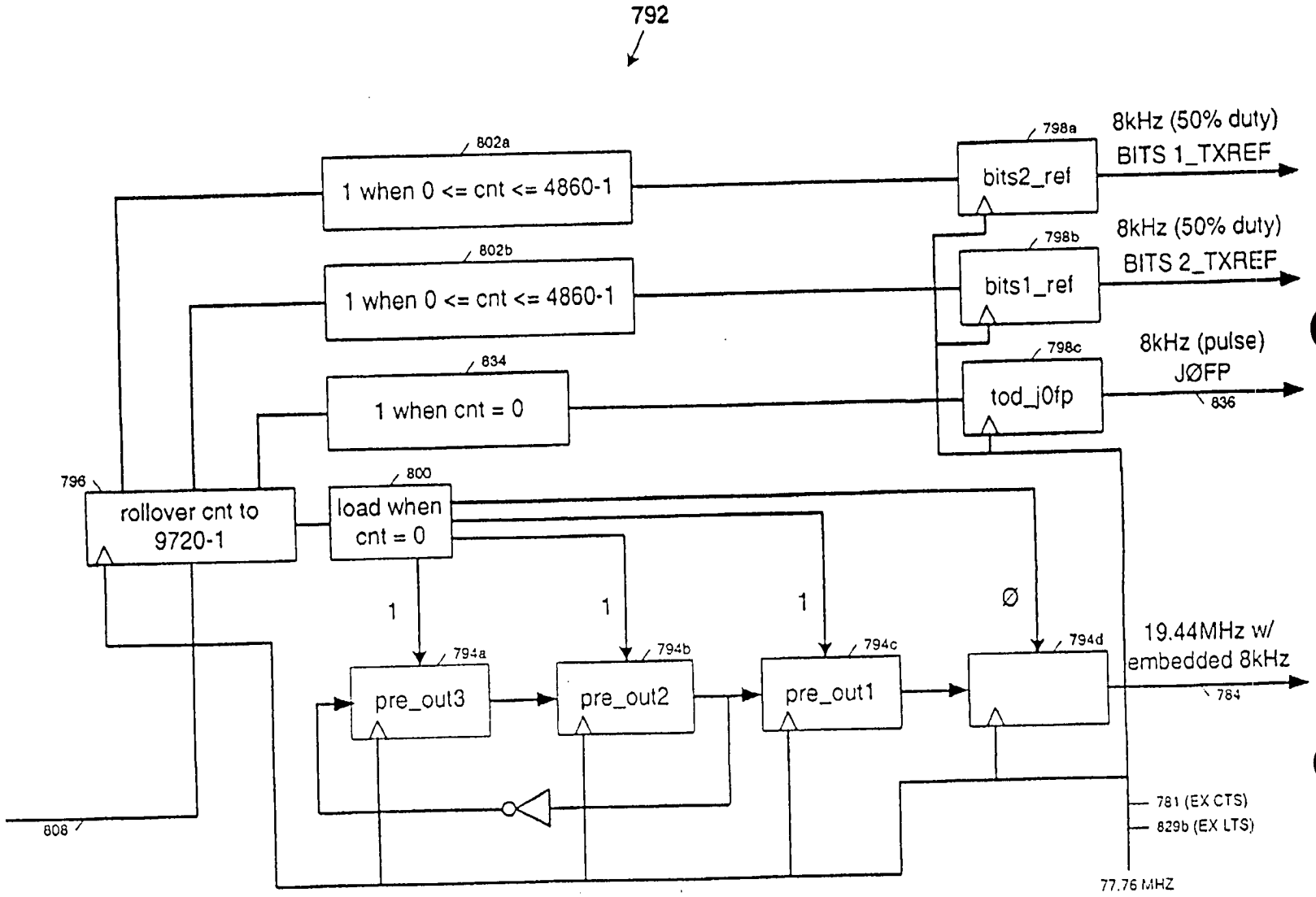
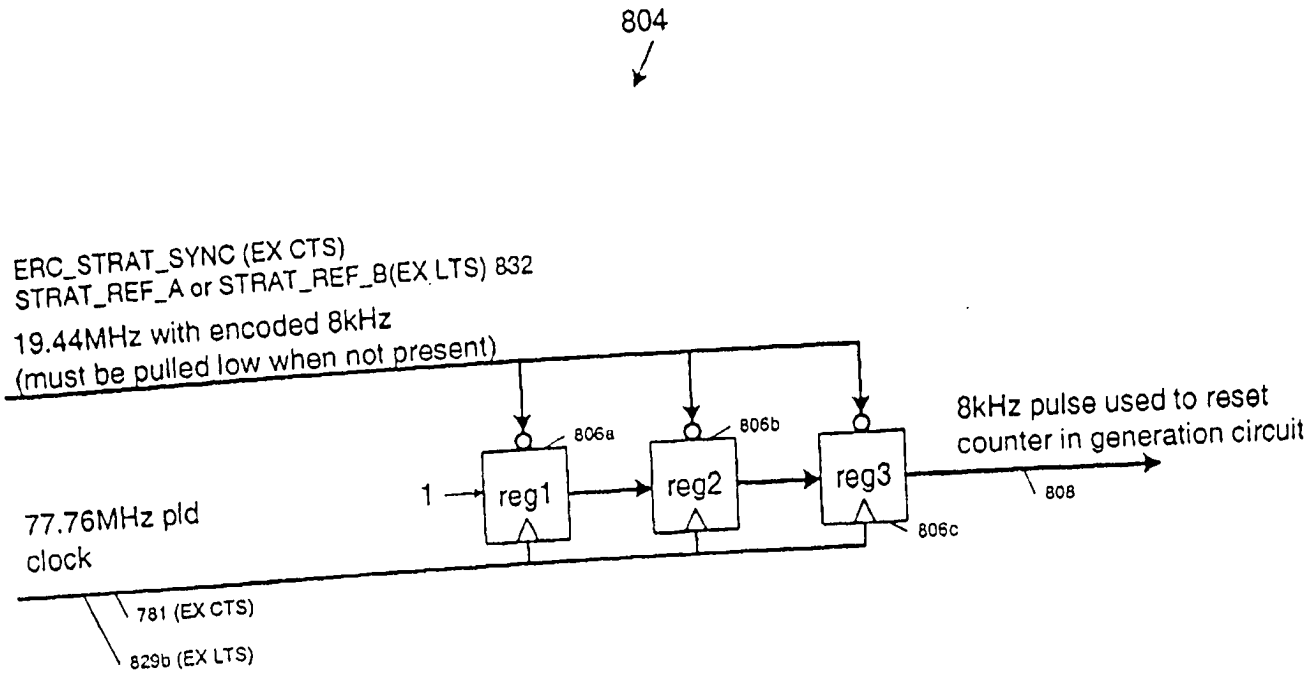

792
802a
1 when 0 <= cnt <= 4860-1
802b
1 when 0 <= cnt <= 4860-1
834
1 when cnt = 0
796
rollover cnt to 9720-1
800
load when cnt = 0
798a
bits2_ref
8kHz (50% duty)
BITS 1_TXREF
798b
bits1_ref
8kHz (50% duty)
BITS 2_TXREF
798c
tod_j0fp
8kHz (pulse)
JØFP
836
1
1
1
Ø
794a
pre_out3
794b
pre_out2
794c
pre_out1
794d
19.44MHz w/ embedded 8kHz
784
808
781 (EX CTS)
829b (EX LTS)
77.76 MHZ

Fig. 52



Extractor

FIG. 53

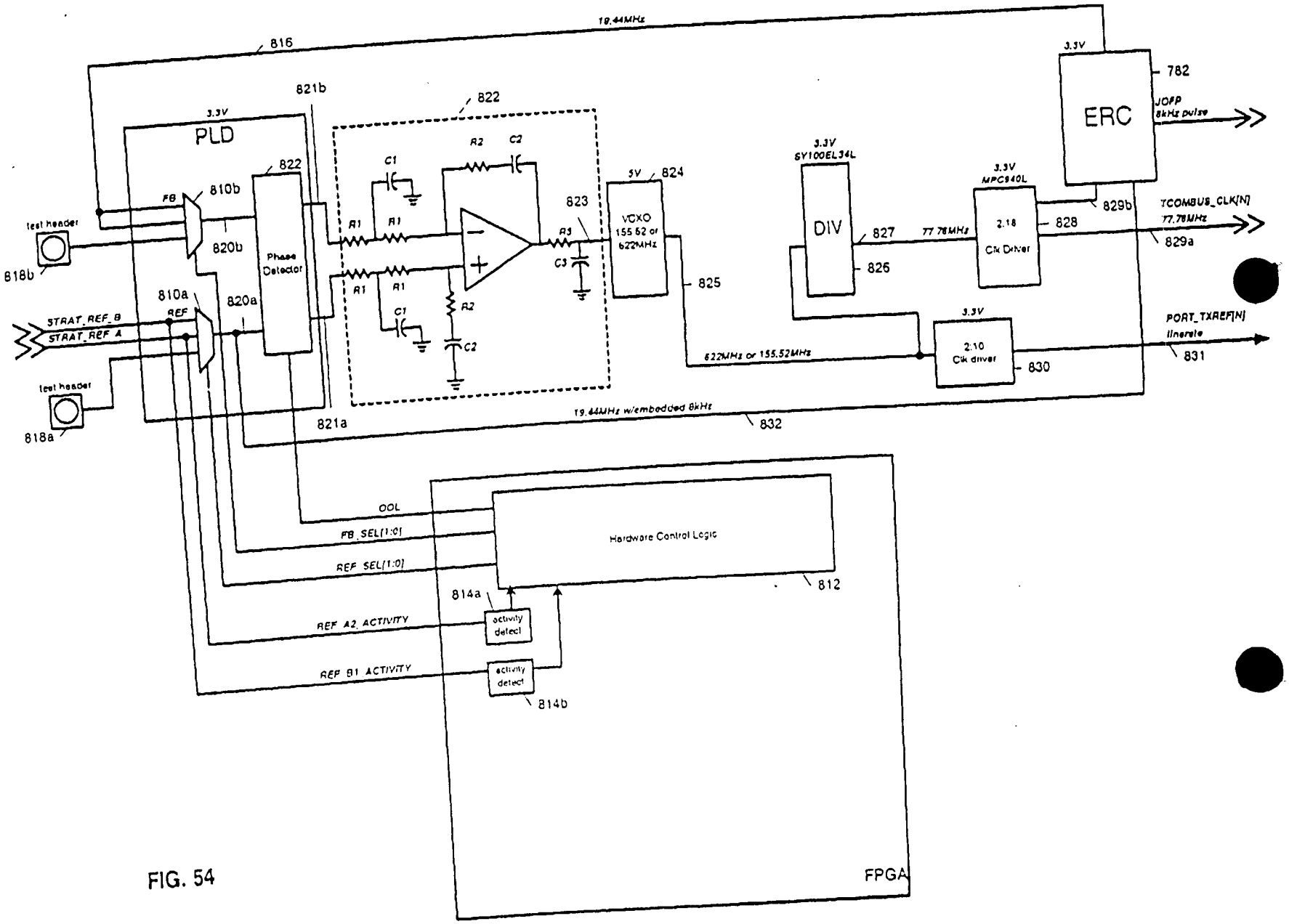

19.44MHz
816
821b
822
3.3V
PLD
FB
810b
820b
Phase Detector
test header
818b
STRAT_REF_B
STRAT_REF_A
810a
REF
820a
test header
818a
821a
C1
R2
C2
R1
R3
C3
5V
824
VCXO
155.52 or 622MHz
825
3.3V
SY100EL34L
DIV
827
826
77.76MHz
3.3V
MPC940L
2:18
Clk Driver
828
829b
829a
ERC
782
JOFP
8kHz pulse
TCOMBUS_CLK[N]
77.76MHz
622MHz or 155.52MHz
3.3V
2:10
Clk driver
830
PORT_TXREF[N]
Itinerate
831
19.44MHz w/embedded 8kHz
832
OOL
FB_SEL[1:0]
REF_SEL[1:0]
Hardware Control Logic
812
814a
REF_A2_ACTIVITY
activity detect
REF_B1_ACTIVITY
activity detect
814b
FPGA

FIG. 54

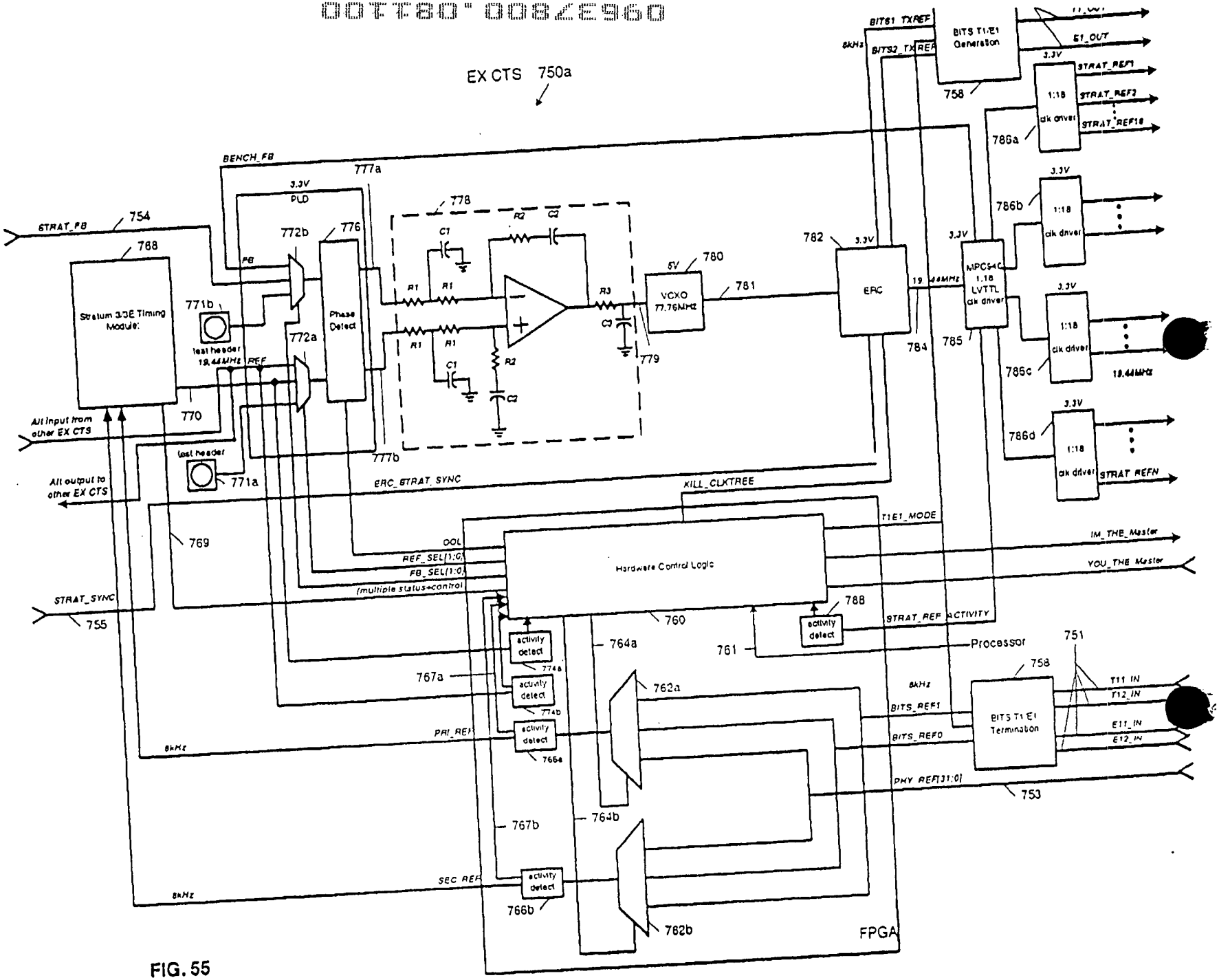

EX CTS 750a
BENCH_FB
777a
3.3V PLD
STRAT_FB
754
768
Stratum 3/3E Timing Module
772b
776
Phase Detect
772a
771b
test header 19.44MHz REF
770
All input from other EX CTS
All output to other EX CTS
test header
771a
777b
778
C1
R2
C2
R1
R3
VCXO 77.76MHz
5V
780
781
782
3.3V
ERC
19.44MHz
MPC5HC 1.1B LVTTL clk driver
784
785
786a
786b
786c
786d
1:18 clk driver
STRAT_REF1
STRAT_REF2
STRAT_REF18
STRAT_REFN
BITS1_TXREF
BITS2_TXREF
8kHz
BITS T1/E1 Generation
758
T1_OUT
E1_OUT
ERC_STRAT_SYNC
KILL_CLKTREE
769
DOL
REF_SEL[1:0]
FB_SEL[1:0]
(multiple status+control)
Hardware Control Logic
760
T1E1_MODE
IM_THE_Master
YOU_THE_Master
STRAT_SYNC
755
788
activity detect
STRAT_REF ACTIVITY
761
764a
767a
774a
774b
766a
PRI_REF
762a
Processor
751
BITS_REF1
BITS_REF0
BITS T1/E1 Termination
T11_IN
T12_IN
E11_IN
E12_IN
PHY REF[31:0]
753
767b
764b
SEC REF
766b
762b
FPGA

FIG. 55

Sent By: Equipe Communications; 781 795 2031; Jul-12-00 3:57PM; Page 3/5

00T80"0082E960

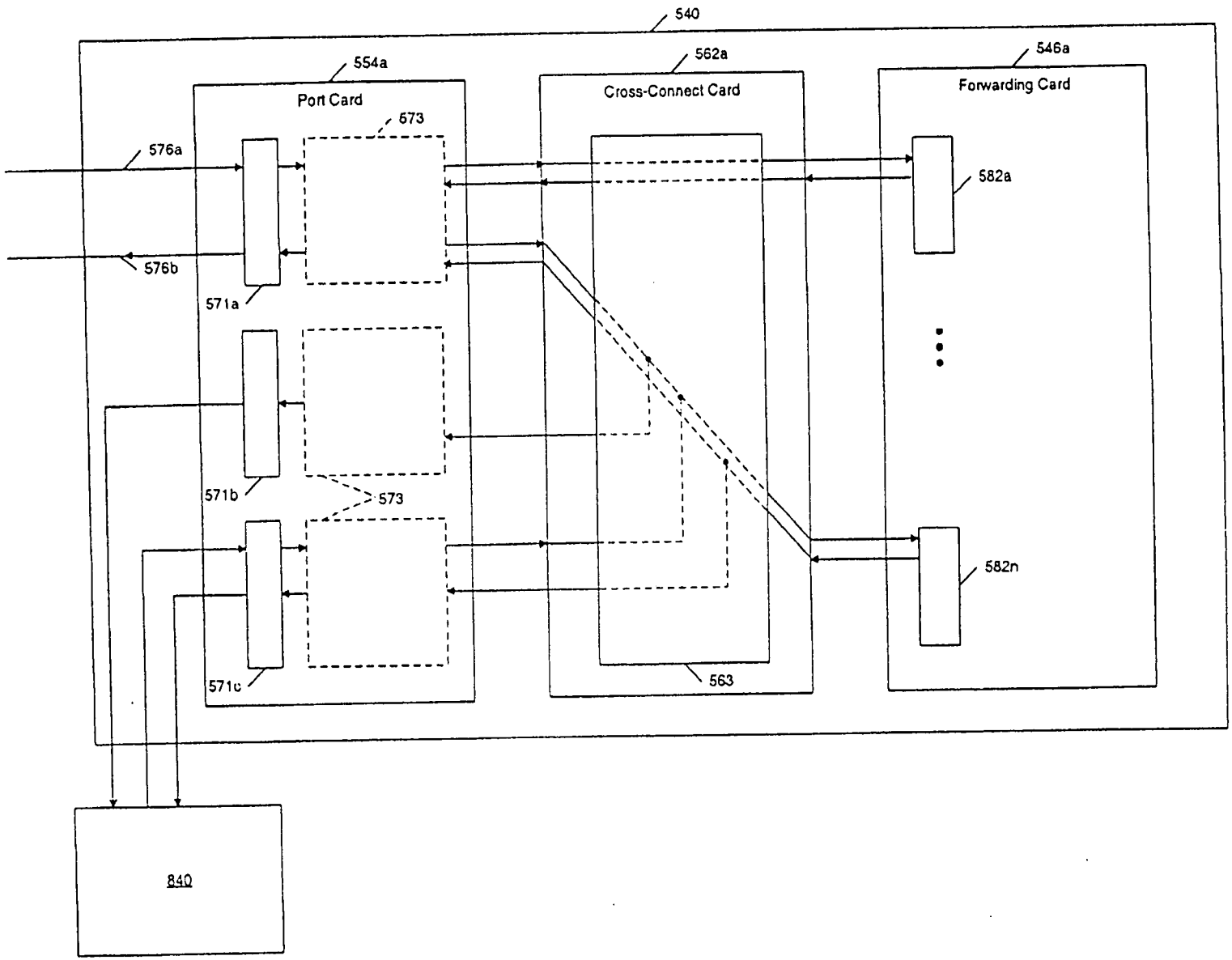
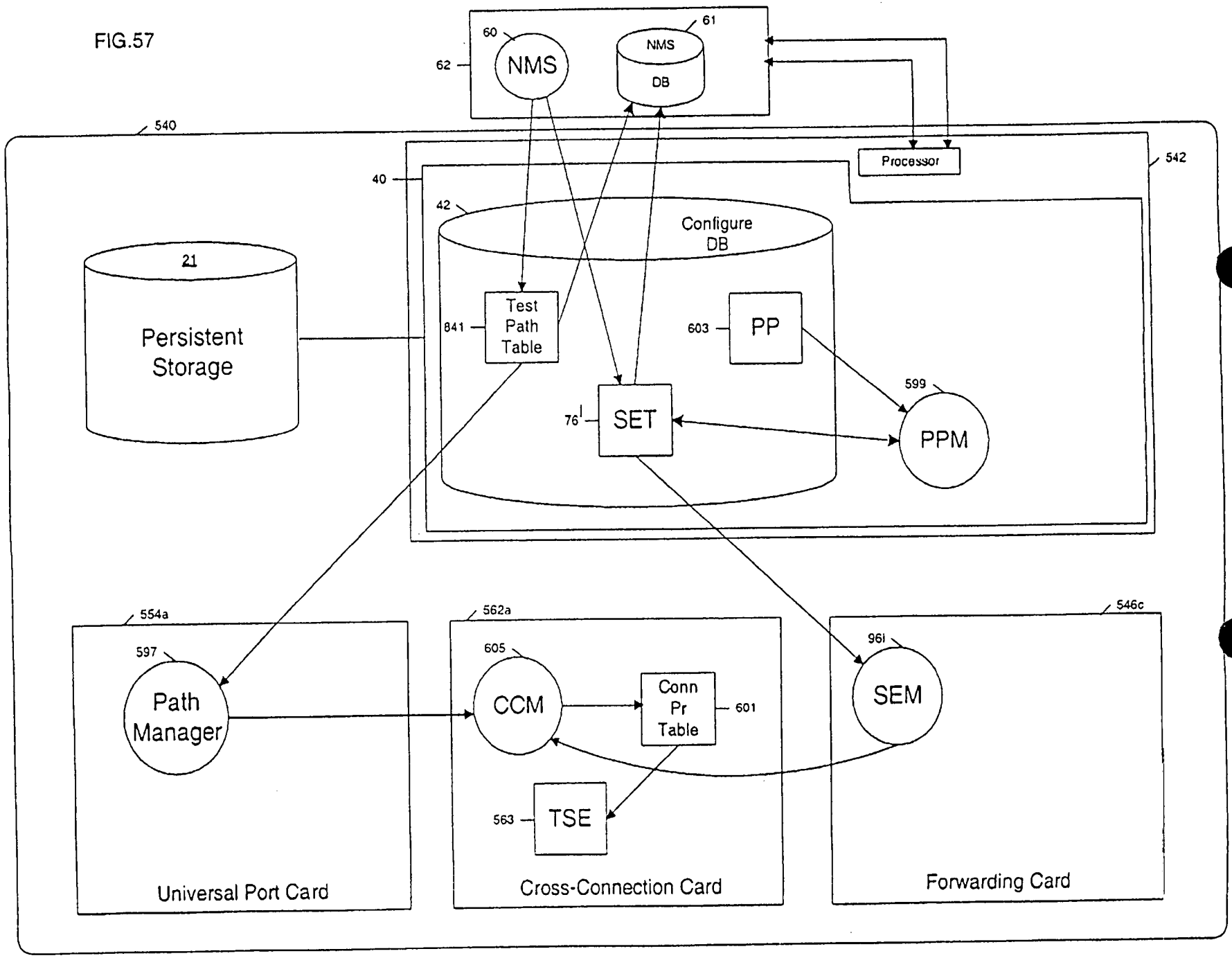


Fig. 56

FIG.57


60
NMS
62
61
NMS
DB
540
542
Processor
40
42
Configure
DB
21
Persistent
Storage
841
Test
Path
Table
603
PP
599
76
SET
PPM
554a
597
Path
Manager
562a
605
CCM
Conn
Pr
Table
601
563
TSE
546c
961
SEM
Universal Port Card
Cross-Connection Card
Forwarding Card

00T80"0082E960

Sent By: Equipe Communications; 781 795 2031; Jul-12-00 3:57PM; Page 5/5

FIG. 58

Test Path Table 841

	Path LID	UP Port LID	Time Slot	# of Time Slots	Monitor (844)	Enable Port Receiver (845)	...
842	1666	1232	4	3	Ingress	No	
843	1666	1233	4	3	Egress	No	
844	1666	1233	4	3	Ingress	Yes	
	⋮	⋮	⋮	⋮			⋮